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URETERAL CALCULUS. WITH A REPORT OF FIVE CASES [1]

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A SURGEON who is called to operate upon five patients suffering from ureteral calculus within as many months has his attention somewhat forcibly drawn to the importance of diagnosis, and to the difficulties of treatment of this class of cases. In former years, calculi arrested in the ureter were considered rare, but since most accurate methods of making a diagnosis in urinary surgery have been available, the frequency with which this condition is present has become more widely appreciated. According to Dr. C. L. Leonard (1), the use of the Röntgen rays has proved the ratio of ureteral to renal calculi to be as 66 is to 33 in cases where the diagnosis has not been confirmed by operation or recovery of the stone, and as 44 is to 29 in cases where the X-ray diagnosis has been thus confirmed.

Renal calculi, in their descent to the bladder, are prone to be arrested at three points in their course: 1. Two inches from the pelvis of the kindey, as the ureter bends forward over the psoas muscle; 2. At the brim of the pelvis, where it dips down across the bifurcation of the common iliac artery; and 3. Close to the vesical orifice of the ureter. The normal ureter is said to be one seventh of an inch in diameter at the upper, one fourth of an inch at the middle, and only one tenth of an inch in diameter at the lower constriction. In the 44 cases of ureteral calculus referred to by Morris (2) the stone was arrested at the upper constriction in 19 instances, at the pelvic brim in 10, and at the vesical extremity of the ureter in 15. These figures correspond very closely to those given by Bovee (3), who collected 64 operations in which an impacted calculus was removed from the ureter by the extraperitoneal route. Among these, 22 were found near the upper constriction, 17 at the pelvic brim, and 18 close to the bladder; while the remaining stones were found at other portions of the ureter.

The symptoms produced by the passage of a renal calculus are sufficiently familiar, and it only remains, after such symptoms have arisen and have subsided, to determine whether the stone has been forced back into the pelvis of the kidney, has been discharged into the bladder, or whether it has been arrested at some point in its journey. If it escapes into the bladder, symptoms of vesical calculus arise; and if the stone remains in the kidney, those of renal calculus continue. The point that chiefly concerns us is to determine at what point of the ureter the stone has lodged. This is not always possible from the symptoms alone. Indeed, Mr. Freyer (4) asserts that the symptoms produced by ureteral calculus are precisely those of renal calculus, except when the stone is lodged in the lower end of the ureter, within an inch or so of the bladder. He admits, indeed, that tenderness at the seat of impaction may be a

[1] Read before the Philadelphia Academy of Surgery, February 5, 1906.

guide, but claims that the Röntgen rays are even less satisfactory than in cases of renal calculus. Although I cannot entirely agree with his premises, I heartily indorse his conclusion, which is, that the rule of surgery in doubtful cases is to first explore the kidney through the loin, and to pass a sound down the ureter before concluding the operation. If a stone is found in the ureter, the wound should be enlarged, and the calculus extracted by appropriate means.

It appears to me that tenderness at the seat of impaction, and the information gained by a technically perfect skiagram, are two very valuable aids to diagnosis. From the symptoms alone it may be possible to determine that renal calculus has existed, and that a calculus is still present, either in the kidney or in the ureter, or in both. It is because we cannot be certain that not more than one calculus is present, that it becomes necessary to make sure that none is overlooked in the kidney even after the stone found in the ureter has been extracted.

A skiagram, to be of value in these cases, must throw a shadow of structures less dense than the least dense calculus; and as phosphatic and uric acid stones are by no means dense, it is necessary to see the shadows of the psoas muscle, to make sure that no calculus is present.

If, after an attack of renal colic, symptoms of renal calculus persist, we may be certain that the stone has, at any rate, not traveled as far as the lower ureter. In the latter case the symptoms of vesical calculus arise, and though no calculus can be found in the bladder, its location may usually be detected by rectal palpation or by cystoscopic examination.

Although a calculus may remain lodged in the ureter indefinitely without producing serious symptoms, yet such cases are exceptional, and were such a calculus to be discovered by chance, it is questionable whether it would not be the surgeon's duty to remove it as a prophylactic measure. Leonard (5) refers to 26 calculi, found, as it were, by accident, impacted in the ureter, all of which were safely passed into the bladder while the patients remained under medical care. Cabot (6) thinks highly of massage in such cases as an aid to the descent of the stone. But it seems to me that the dangers which may ensue from neglect of ureteral calculus are greater than those which attend its removal by operation. Among 21 operations mentioned by Fowler (7), there were only 3 deaths; and in reviewing the literature of the last two years while preparing this paper, records of 25 operations for ureteral calculus have been found, many of them not in Fowler's list, with only 2 deaths — one in a patient with recurrent carcinoma of the ureter, and the other in my own patient, to be presently mentioned.

If the stone is rough and mamillated, it is more apt to excite ulceration and inflammation, although less apt absolutely to occlude the ureter than is a smooth stone. On the other hand, while a small stone may be more easily passed by ureteral peristalsis and by the *vis à tergo* of the kidney's excretion, yet if it does become arrested, it is almost certain to cause hydronephrosis, and give rise to serious symptoms in a short time. When such cases are seen before marked infection is present, the mortality from the operation is slight, as the kidney does not then require removal. The condition of the kidney is really, I think, the main point upon which the success of treatment must depend. In the only one of my cases which terminated fatally, there were calculi impacted in both ureters, and the operation which removed the stone from the left ureter was unsuccessful because of the diseased condition of the right, which was not known until the post-mortem examination.

The route to be chosen for the removal of the stone is a matter of much importance. If the stone is known to be near the bladder, it is usually most successfully removed intravesically. In the female, the vaginal route has been employed, and the ureter exposed within the layers of the broad ligament. This appears to me a less satisfactory method than the intravesical, and the same may be said of the perineal route in the male. In the female, the urethra can be dilated sufficiently to admit suitable forceps, or even the finger, and, after slightly incising the vesical orifice of the ureter, the calculus can usually be extracted without much difficulty. This plan obviates the possibility of a vesicovaginal or ureterovaginal fistula, which is not very remote when the vaginal route is chosen. In one of Freyer's patients, the ureter was exposed by incising the vagina, but the stone slipped farther up the ureter and could

not be extracted. It was, however, found in the dressings on the following day; but the patient developed pelvic cellulitis, had a very slow convalescence, and when last seen still suffered from kidney symptoms. In the case of a patient where intravesical manipulations had failed to dislodge the stone, Millet (8) succeeded in evaginating the obstructed ureteral outlet through the dilated urethra, by means of one finger within the bladder and another in the vagina. With the parts thus under full control, he was able to remove the calculus with success. Crawford (9) successfully removed from a male patient a calculus measuring one and three eighths inches in diameter by intravesical dilatation of the ureter. In the third case recorded to-night, I found it impossible to extract the stone extraperitoneally, and accordingly opened the bladder above the pubes, and by slightly incising the ureter was enabled to deliver the stone into the bladder and successfully remove it.

But this means will not suffice, unless the calculus is lodged very close to the vesical orifice of the ureter; and for those stones impacted more than an inch away from the bladder-wall I would strongly recommend the extraperitoneal operation. This is, of course, the route selected in cases where the location of the calculus is doubtful, since it affords access to practically the entire length of the urinary tract. In enlarging the lumbar incision downwards, care should be taken not to injure the spermatic cord, and at the conclusion of the operation the anterior abdominal wall should be repaired as after an operation for ventral hernia. Even in a child of 3 years Betham-Robinson (10) exposed, extraperitoneally, the ureter close to the bladder-wall, and successfully removed the impacted calculus.

As the peritoneum is stripped back from the iliac fossa, it carries the ureter along with it, and this structure is therefore to be sought on the vesical side of the wound. Proper knowledge of pelvic anatomy is essential to the operation. When a stone is exposed in the ureter, it is proper to try to dislodge it, and to push it either upward into the pelvis of the kidney, or down into the bladder. In doubtful cases, where the kidney alone is first exposed, it may be possible to push the calculus on into the bladder by a bougie, or even to extract it through the kidney by means of the urethral forceps. If it can be pushed on into the bladder, it can be satisfactorily removed by the evacuator.

An incision into the ureter itself is usually to be avoided, although, in my own opinion, the probability of a permanent urinary fistula remaining is exaggerated. But an incision through the renal cortex, or one directly into the pelvis of the kidney, is to be preferred, since the tract required for drainage is shorter, and the wound may be more closely sutured. But if the calculus cannot be dislodged, it is safer to incise the ureter than to attempt to crush the stone *in situ*. If the calculus is oxalate of lime, it may be impossible to crush it without so injuring the ureter as to cause sloughing; and even if it could be successfully crushed, the detritus would be very likely to give rise to very serious trouble before being completely evacuated. The plan adopted by Mitchell (11) and by Corson (12) of placing sutures before extracting the stone, thus using the calculus as a bobbin, may prove advantageous when the wound is deep. It has been my practice to employ, when possible, two rows of sutures, the first, of catgut, for the submucous tissues, and another of silk, and of the Lembert type, for the muscular walls of the ureter. This plan, I am convinced, decreases the probability of a urinary fistula persisting. Fiori (13) has recently recorded a remarkable operation in which he exposed the ureter extraperitoneally, split it for a distance of 16 cm. (12 cm. in its abdominal and 4 cm. in its pelvic portion), and thus succeeded in extracting 11 or 12 small calculi, the largest weighing 5 grams, being impacted close to the bladder. He then reconstructed the ureter by sutures, using a sound as a guide, and had the satisfaction to have the urinary fistula which resulted close a few days after the operation. Although, as he acknowledges, it was a difficult and somewhat hazardous operation, yet the event justifies his course of action in preferring ureterolithotomy to nephrectomy, the only alternative.

Finally, a word may be said about the occurrence of carcinoma in the ureter as the result of calculus disease. One of the patients I operated on showed the presence of carcinoma in the ureter immediately above the site of impaction, but this would probably have escaped

detection if the kidney had not been so diseased as to require removal, and hence to allow a microscopical study to be made of the entire specimen.

Primary cancer of the ureter is admittedly rare. Metcalf and Safford (14), only one year ago, were unable to find more than seven authentic cases on record, including one of their own, and in a majority of these cases no calculus was present. It is probable that most cases of cancer of the ureter have escaped detection, and that as operations on the ureter are more frequently performed, such changes will be more often found. The mere possibility of malignant changes occurring, however, only serves to emphasize the need of prompt removal of the calculus.

The following cases of ureteral calculus are reported with the hope of exciting discussion among the fellows; and among some of the unsettled points on which I am anxious to learn their views I would particularly mention the following:

The value of the X-ray and the cystoscope with bougieing of the ureter in diagnosis.

The significance of localized tenderness.

The propriety of exploring the ureter intraperitoneally to locate the suspected stone.

The question of removal of quiescent or latent stones.

The best route for the removal of juxtavesical stones: whether perineal, vaginal, intravesical, suprapubic, or extraperitoneal.

The proper treatment of the stone when ound: whether it should be pushed on into the bladder, should be crushed, or whether the ureter should be incised.

The best method of suturing the ureter.

Whether nephrectomy is to be countenanced, except for incurable disease.

The report of the following cases of ureteral stone is not with the idea of contributing anything new, but particularly to excite discussion among the fellows upon the subject; to learn their experience with the results of the findings of the X-ray; their method of exposing the kidney, as well as the manner in which they deal with the ureter when it has to be opened directly. The diagnosis of none of these cases was to me doubtful, as the salient points from which judgment is formed were present in all; I refer to the history, to pain, to the character of the pain, to the location of the pain, to the tenderness and rigidity of the overlying abdominal walls, urinary and X-ray findings.

All of these cases were operated in the German Hospital.

CASE 1. Ureteral calculi (impacted). Removal.

Miss ——. White. Æt. 22. Admitted July 24, 1905.

Mother died of tuberculosis. No history of malignancy. Patient always enjoyed good health. Five years ago. suffered from typhoid fever.

For past two years has complained of pain in right kidney region, referred downward into inguinal region; pain almost constant, but has had three attacks of severe pain at intervals of six months; duration seven to fourteen days, always accompanied by nausea, vomiting, and dizziness.

Abdominal Examination. Right kidney movable, not enlarged, no distention or rigidity, no tenderness over abdomen.

No X-ray taken.

Operation. July 25, 1905. Vertical incision right ileocostal space; pelvis of the kidney found to be the seat of small hydronephrosis, about the size of a lemon; ureter found dilated to the size of the little finger. The ureter was incised and the fluid allowed to escape; a probe was introduced and a stone palpated; after much effort the stone was brought upwards and delivered through the opening in the ureter at the pelvis of the kidney.

Discharged, cured, August 21, 1905.

CASE 2. Nephrolithiasis, double. Impacted calculi, both ureters.

Mr. ——. White. Æt. 33. Admitted September 7, 1905.

Father died of paralysis, mother of nephritis. Father's mother died of cancer. Neisser's disease twice; last time three years ago. Acute rheumatic fever twice; last attack fifteen years ago. Patient drinks beer moderately. Always inclined to be constipated.

On day of admission was seized with sudden acute pain in left lumbar region, radiating from near crest of the ileum to the left testicle; testicle retracted. The patient was nauseated, suffered from frequent urination, passing large quantities.

Abdomen soft, no rigidity, no pain on pressure over left kidney or course of ureter. No palpable mass.

X-ray. Dense shadow in region of right kidney.

Operation. September 9, 1905. Oblique incision left flank. Calculus found impacted in ureter 3 cm. below the pelvis of the left kidney. An effort was made to work the stone up into the pelvis, but failed; the kidney was delivered, and an incision made horizontal to the poles into the pelvis, and scoop and forceps used to deliver the stone, but failed. On palpation, the stone was felt in previous location; an incision was made in the long axis of the ureter, over the calculus, and the same delivered. The stone was the size of a small pea, irregular, and very hard. Before suturing the ureter, a probe was passed into the bladder.

This patient did well for three weeks, when he was seized with severe pain in the right loin, and in a very short time became uræmic, and died October 10, 1905. Autopsy showed an impacted stone in the right ureter.

CASE 3. Urethral calculus. Suprapubic urethrolithotomy and lumbar incision.

Mr. ——. White. Æt. 49. Admitted October 16, 1905. Father died of pneumonia, mother of heart disease. No history of tuberculosis or malignancy. Patient does not use alcohol, tobacco, tea, or coffee. Had suffered from several attacks of malaria 15 years ago. Considerable sore throat; subject to colds. In 1896 was operated for acute appendicitis. In January, 1905, was seized with severe pain in right side, referred downward to the right groin. Was operated for abdominal adhesions in June, 1905, but not relieved.

Present Illness. Pain is paroxysmal, coming on suddenly at any time, beginning, apparently, in the right inguinal canal, and referred to the right kidney. These attacks are followed almost immediately by vomiting, requiring morphine for relief, but are not followed by irritability of the bladder.

Abdominal Examination. Tenderness on pressure at a point on the semilunar line, opposite the anterior superior spine.

X-ray showed large dense shadow in region of the kidney and small one near bladder.

Operation. October 30, 1905. Curved oblique incision right lumbar region to the anterior spine of the ilium. A stone was located in the vesical end of ureter close to bladder wall. After many attempts to dislodge the stone, either into the bladder or by drawing it up into the ureter, all of which were unsuccessful, the wound was covered and the patient placed in the dorsal position and the bladder opened suprapubically; the vesical orifice of the ureter was incised slightly, and by pressure from behind the stone was finally brought into view and delivered. The stone was the size of a split pea and very hard.

The suprapubic fistula closed on the eighteenth day. Patient was discharged, cured, November 25, 1905.

CASE 4. Ureteral calculus.

Mrs. ——. White. Æt. 32. Admitted November 21, 1905. One sister died of diabetes, two aunts and a great-uncle of cancer.

Patient states that at the age of 21 she had an acute attack of epigastric pain, with vomiting; this attack lasted for one or two days, and was associated with severe headache. Had a similar attack six years ago; lasted three days. Patient never vomited blood, always biliary material.

Present history dates back five years, when patient began with acute pain in the left iliac region, radiating to the right loin and back; pain was so acute that anodyne was used for its relief. These attacks occurred at intervals, from one to two attacks each month. For one year the patient was free from these attacks.

Six weeks before admission to the hospital, attacks occurred every day or night; very acute pain, beginning in the right iliac region, radiating to the right lumbar region. Large doses of morphine were used for these attacks. Never had pain in the right lumbar region. Patient was never jaundiced, never noticed blood in the urine.

Upon examination, the right kidney was palpable and movable, left kidney not palpable, no tenderness elicited over either right or left iliac region.

X-ray. Dense shadow in region of right kidney, formed body.

Operation. November 25, 1905. Incision right flank, kidney exposed. A stone was found in the ureter. Stone was removed, and the kidney, being diseased beyond operative repair, was also removed.

Patient was discharged, cured, December 14, 1905.

CASE 5. Miss ——. White.

History of right renal colic for five years. Nothing of note in family or personal history, other than attacks above referred to.

Point of tenderness a little above the line of the right anterior superior spine of the ilium very decided; upon one occasion this tenderness suggested to the mind of the medical attendant the probability of inflammation of the appendix; this was ruled out, however.

X-ray. Negative.

Operation revealed a stone in the right ureter, three inches below the pelvis of the ureter, with stricture of the ureter to the extent of one inch, through which it was difficult to pass the smallest probe. After incising the ureter above the stricture, the stone was removed. The ureter between the stricture and the kidney was dilated to the size of the little finger. The kidney was so diseased that it was removed.

The patient made an uneventful recovery.

Microscopical examination of the ureter showed clearly carcinomatous change.

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INTERSTITIAL HERNIA

With Report of Two Cases

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CASE I. *Strangulated inguinoproperitoneal hernia; reduction en masse; herniotomy. Recovery.*

F. M.; male; age 52; admitted to St. Luke's Hospital, January 18, 1904.

History. The patient has had a right inguinal hernia for six years past. He first noticed it after lifting a heavy timber. It has gradually grown, until at the present time it is larger than two fists. Shortly after its development he had a truss fitted by his family physician, which has been quite satisfactory. It has retained the hernia, excepting when he was obliged to lift unusual weights. At these times, when the hernia came down, he could, by manipulation, effect its reduction without difficulty. Two days ago the hernia slipped by the truss while he was loading wood upon a sleigh, and was allowed to remain down about an hour before an attempt was made to replace it. When an effort was made to reduce the hernia, it failed. The pain was moderately severe, but not sufficient to prevent his finishing his day's work. After returning home in the evening, another unsuccessful attempt was made to reduce the hernia. The pain had now become quite severe and was accompanied by nausea. About ten o'clock at night he vomited once. After this he became alarmed and sent for his family physician, who administered a hypodermic of morphine and applied hot fomentation to the hernia. After an hour the hernia was reduced. At the time, he noticed that the swelling did not disappear suddenly, as it had on former occasions, when the gut slipped back into the abdomen. The pain was lessened, but did not subside completely. The large tumor had disappeared, but he could still feel a small mass in the inguinal region, which was exceedingly sensitive to touch. The nausea continued all through the night, but he did not vomit again. There was no bowel movement after the hernia came down, neither did any gas escape. The following morning, the symptoms remaining the same, he was brought to the hospital.

Physical Examination. On admission to the hospital, examination showed the heart and lungs negative. The pulse was slightly accelerated and the temperature was 99° F. The abdomen was moderately distended, but not tender. There was no marked rigidity of the abdominal muscles. Over the middle third of Poupart's ligament, on the right side, there was a tumor about the size of an English walnut, rather firm, immovable, and tender on pressure. The inguinal canal was empty, admitting the index finger freely. With the finger in the inguinal canal, the tumor could be felt above and to the inner side of the internal abdominal ring, in the abdominal wall. The scrotum contained the testicles, which were normal in size and appearance.

The subjective symptoms were about as they had been since the accident occurred. There was some pain in the inguinal regions, which he claims is as intense as it was immediately after the hernia was reduced. The bowels have not moved, and no gas has been passed. With these symptoms continuing, an operation was advised, it being considered probable that a complete reduction had not been accomplished. The existence of a properitoneal sac was not recognized.

After the usual preparation, the operation for herniotomy was begun. After exposing the external abdominal ring, a sac was found, extending from the ring down into the scrotum. This was freed from its attachments up to the external ring. The inguinal canal was opened by incising the aponeurosis of the external oblique. After freeing the inguinal sac up to the internal ring, it was opened, and from it escaped a small quantity of bloody serum. On pulling down on the inguinal sac, the neck of a second sac was brought into view. This sac was opened by extending the incision made in the first sac. It was seen to contain a small knuckle of the small intestine and a piece of omentum. The omentum was dark in color and œdematous. It was freed from the sac, drawn out beyond its point of constriction, ligated, and cut off. The stump was pushed back into the abdomen. With the replacement of the omentum, the knuckle of gut was freed and dropped back into the abdominal cavity. The second sac was now dissected from its attachments, and found to occupy a cavity between the pertioneum and the transversalis fascia. The cavity containing it was above and to the inner side of the inguinal canal. After pulling out the sac from its place in the abdominal wall, it was found to open by a common orifice with the first sac into the abdominal cavity. This orifice, which would barely admit the index finger, was constricted and surrounded by a dense band of fibrous tissue. In size, the deep sac was not as great in circumference as, and only about one third the length of, the inguinal sac. It admitted freely the thumb up to the base of the first phalanx.

After carefully studying the relations of the two sacs to each other and to the abdominal wall, the common orifice was enlarged to admit two fingers into the abdominal cavity. The strangulated loop of gut was searched for and brought into the opening. The part constricted was found to be a portion of the convex border of the gut opposite the mesentery; only a segment of the circumference of the gut was strangulated. Although the intestinal wall was discolored, yet the

circulation seemed to be undisturbed, and its surface still showed its normal gloss. It was deemed safe to replace it in the abdomen. The two sacs were then pulled forward until a funnel-shaped process of peritoneum, their common neck, was brought into view. This was abcised beyond the abdominal orifice of the sacs, and the resulting opening in the peritoneum closed by suture. The operation for the radical cure of the hernia was completed, Andrews's modification of the Bassini method being employed.

The wound healed by primary union; recovery, with cure of the hernia, resulted. The patient was discharged February 6, 1904.

The term "inguinoproperitoneal" hernia is reserved for those which fulfill the following conditions: 1. There must be two sacs or two divisions of one sac. 2. The inner or intraparietal sac lies between the peritoneum and the transversalis fascia. 3. The outer or inguinal sac occupies the inguinal canal, or extends down into the scrotum for a variable distance, depending upon the degree of completeness attained by the hernia. 4. The origin of the two sacs is by a common funnel-like process. They open into the abdominal cavity by a common orifice.

Although Parise (1) first described this variety of hernia, it was Krönlein (2) who first gave it the name of properitoneal hernia and described fully its anatomical and clinical peculiarities. Since Krönlein's work appeared, a large number of cases have been reported, with but few new facts added to what he had observed. In 1895, Breiter (3) was able to find the reports of 36 cases of which no question could be raised as to their place in this group. These, added to Krönlein's 23 cases, made 59 that had been reported up to that year. The works of Krönlein and Breiter have been supplemented since by papers from Faguet (4) in France, Moynihan (5) in England, and Schmidt (6) in Germany.

Etiology. It has been observed that properitoneal hernia is frequently associated with imperfect descent or development of the testicles. Many writers assume from this the existence of a causal relation between the arrest of descent of the testicle and the formation of a properitoneal sac. Undoubtedly, given a case in which the ectopic testicle is placed in the inguinal canal or just below the external ring, associated with a congenital hernia, that impulses from above continuing while the descent of the gut in the inguinal sac is impeded by the misplaced testicle, the gut will be forced laterally in the direction of least resistance, which may be the cause of a diverticulum of the sac being forced into the loose cellular tissue between the peritoneum and the transversalis fascia. On the other hand, it is well known that many cases of properitoneal hernia have been reported in males in which the testicles, fully developed, have reached their normal position in the scrotum. In a few cases reported, this variety of hernia has been found in the female. Eccles claims that, taking all the reported cases, they are relatively more common in the female than in the male sex.

Considering further the etiology of properitoneal hernia, we may have the return of the bowel from the inguinal sac impeded by the cicatricial narrowing of the neck of the inguinal sac, thus causing a bulging of the neck of the sac between the layers of the abdominal wall.

Repeated and unrestrained efforts at reduction of a hernia made by the patient may be a cause of the development of the properitoneal sac which is secondary to an existing inguinal sac. Obstruction of the inguinal canal, other than from a misplaced testicle, may assist in forming a second sac. This may be from a congenitally small external ring with an unusually large canal. Cicatricial narrowing of the external ring, resulting from trauma or from the pressure of a misfitted truss, which closes the external ring and not the canal, may be factors in establishing a secondary properitoneal sac. Eppinger believes them to be all congenital, the inner sac developing from a diverticulum of the funicular process between its point of origin and the internal ring. As a result of this dislocation, the normal descent of the testicle is interfered with, and an inner sac is formed from the upper portion of the inguinal process. Congenital diverticular pouches located about the inner ring, as first observed by Rokitansky, may constitute a starting-point for the formation of a properitoneal sac. Moynihan has observed them in adults, but more often in the fœtus.

Reduction *en masse* has been considered as a cause of properitoneal hernia. The phenomenon known as mass reduction has been

frequently observed in those hernias in which a bilocular sac existed. It is probable that in a large proportion of cases in which this accident has occurred there existed, previous to the reduction, a second sac, into which the contents of the inguinal sac had been frequently forced. Strangulation after one of these apparent reductions continues from constriction of the common abdominal orifice of the two sacs. At the operation or at the autopsy the presence of a properitoneal sac may be first discovered. The generally accepted explanation of this so-called reduction *en masse* is, that an inguinal or crural sac, by repeated and forcible manipulation, is separated from its attachments to the surrounding structures and invaginated or is pushed into the abdominal cavity without the relations existing between the sac and its contents being changed by the change in position of the sac. It may be here stated that such a separation of the sac, particularly of a congenital hernia, would seem impossible. The difficulty encountered in separating an acquired hernial sac from its attachments in herniotomy, which, in most operations, is considerable, would seem to preclude the possibility of this occurring from taxis applied through the intact coverings of a hernia. Strubel (7) believes that this usual explanation of reduction *en masse* of a hernia to be unsupported by autopsy, and considers that it occurs only in bilocular hernia of some variety. Other accidents that may simulate reduction *en masse*, but which cannot be strictly so considered, are rupture of the sac, with the escape of the hernia into a pocket in the abdominal wall, or rupture of a sac containing a large quantity of hernial fluid, with the escape of the fluid into the abdominal cavity or between the muscles of the abdominal wall, the gut or omentum remaining strangulated. This occurring in a fat patient where the wall is thick and hernia small, the presence of a strangulated piece of intestine in sac might be overlooked. The diminution in size of the tumor might be considered evidence of complete reduction of the hernia.

In summing up the factors that appear to us as being the most important in the causation of properitoneal hernia, and also of the other forms of interstitial hernia, we may mention that there appears to be good reason to believe that congenital defects, such as incomplete descent of the testicle, congenitally misplaced internal abdominal ring, unusually narrowing of the external ring, or congenital diverticular-like process of peritoneum about the internal ring, may determine the development of a secondary interstitial sac, the inguinal sac being primary in time of development. It has been shown that bilocular hernia occurs more frequently on the right side than on the left (33 in right and 20 in the left, in 59 cases collected by Breiter). It is also well known that ectopic testes occur oftener in the right side, and that the funicular process closes later on the right than on the left side. These facts indicate that some relation may exist between these congenital defects and the occurrence of a properitoneal hernia. However, the existence of this variety of hernia without the congenital defects mentioned above indicates that the other etiological factors detailed may occasionally determine the development of a second sac. The chief we believe to be the use of a poorly fitted truss.

Relation of the Properitoneal Sac to the Internal Ring. The inner or properitoneal sac generally occupies one of the three position: 1. Between the internal ring and the anterior superior iliac spine, its long axis being directed upwards and outwards parallel with Poupart's ligament. This is the usual position, and easiest recognized before the sac is exposed, either by operation or autopsy. 2. It may be directed downwards and inwards to the side of or in front of the bladder. This form has been described as hernia inguinalis antevesicalis. 3. It may be directed backwards and occupy the inner part of iliac fossa. In this variety the inner sac lies close to the retroperitoneal pouches that are known as the subcæcal fossæ. Moynihan believes that certain cases described as hernia into the retrocæcal fossæ have in reality been properitoneal hernia belonging to this third group. W. Schmidt (8) describes an inguino-properitoneal hernia in which the properitoneal sac extended from the internal ring to the obturator foramen, occupying a part of the true pelvic cavity. The patient had what was considered a common left inguinal hernia that had existed for several

years. Twice it had become strangulated. The first time, reduction, which was easily made without an anæsthetic, was complete. A few months later, it again became irreducible and painful. An attempt at reduction was made and considered successful. The symptoms of strangulation continued. Operation upon the second day after the apparent reduction showed the inguinal sac to contain only about 30 c.c. of bloody fluid. As the cause of the persisting symptoms of strangulation could not be discovered through the herniotomy wound, the abdomen was opened in the median line. With the patient in the Trendelenburg position, a careful search revealed the properitoneal sac deep in the pelvis. An opening connecting with the inguinal sac, that just admitted the index finger, was located. The strangulation occurred at the neck of the properitoneal sac.

The size of the properitoneal sac is usually small, and in this respect bears no relation to the inguinal sac. Many of the reported cases were described as Littre herniæ, the properitoneal sac containing only a small diverticular-like segment of the circumference of the gut. This was the condition found in our case.

The inguinal sac may occupy any part of the inguinal canal or extend into the scrotum. It is frequently congenital, and at times double. In itself, it differs in no particular from the sac of an ordinary inguinal hernia. The common abdominal orifice of the two sacs is frequently contracted. Its margin may be rigid from the presence of cicatricial tissue, due, no doubt, to repeated traumatism from the forcible reduction of the hernia.

The Diagnosis of Properitoneal Hernia is seldom made, excepting when the properitoneal sac is exposed to view during an operation or at the autopsy. Braun (9), in 1892, reported what he believed to be the first case in which the presence of a properitoneal sac was recognized and the exact anatomical condition detailed before the patient was operated upon for the relief of the strangulation which existed.

The usual history of these cases is, that a patient with an inguinal or femoral hernia which has been hitherto reducible suddenly develops symptoms of subacute or acute strangulation. Reduction by taxis is attempted and followed by apparent success. The pain, obstipation, and other symptoms of strangulation persist, with a fatal termination, unless relieved by operation.

The presence of the properitoneal sac, when filled with gut or omentum, can be recognized in some cases. In those in which the sac is directed upwards and outwards, the presence of a tumor or tumefaction makes it possible to map it out.

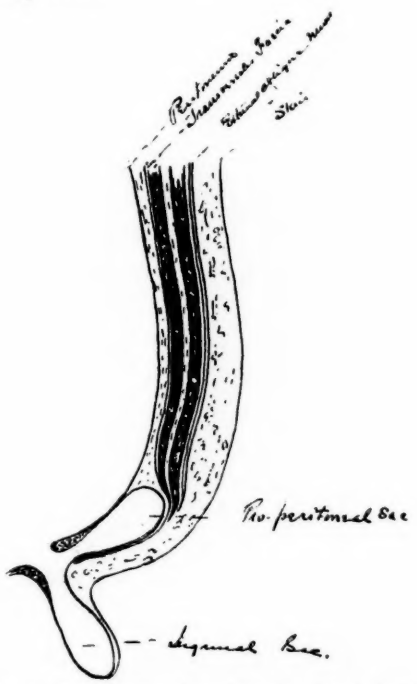

Fig. 1 Inguino-properitoneal hernia. Hernia inguino-properitonealis. Rarest type of inguino-interstitial hernia.

When the sac is directed downwards and inwards toward the bladder, or when it is directed backwards in the pelvis, its deep location precludes the possibility of its recognition by palpation or percussion. In Breiter's collection of 36 cases, it was possible in 22 to recognize a tumor which was proved either by autopsy or operation to be the properitoneal sac.

Moynihan believes these figures to be incorrect, and supports his argument by the

examination of specimens found in the Museum of the London Hospital. These show that in the large majority of cases the direction of the sac is such that it could not possibly be recognized by means of physical examination made during life.

Strangulation of a properitoneal hernia (or of any variety of bilocular hernia) may happen in one of three places.

1. It may occur in the common orifice of the two sacs. If the hernia appears to have been

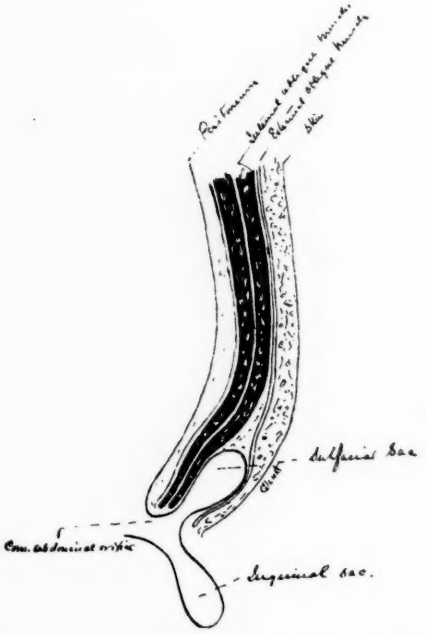

Fig. 2. Inguino-interstitial hernia, second type. Hernia inguino-subfacialis. (Goyrand).

reduced, it means that the contents of the inguinal sac have been pushed into the deep sac without affecting in any way the part strangulated. If the sac occupies a position which will permit of its being recognized by palpation, the persistence of the symptoms of strangulation are easily explained. The absence of a tumor indicating the presence of a properitoneal sac should not, however, deter a surgeon from operating in cases of apparent reduction in which the symptoms of strangulation continue. The case of Schmidt detailed above demonstrates the necessity of making a careful search of the hernia region for the properitoneal sac..

2. Strangulation may take place at the neck of the properitoneal sac. If there is no external evidence of the existence of this sac, the case will pass for one of intestinal obstruction. The cause will only be revealed after the abdomen has been opened. In all cases of obstruction when there is a reducible hernia, the possibility of a second interstitial sac lodging a loop of gut should be considered.

3. If the constriction occurs at the neck of the inguinal sac, the case is one of ordinary strangulated hernia. The properitoneal sac may be overlooked even in cases submitted to operation.

CASE II. *Left inguinointerstitial hernia (hernia inguinosubjascialis); herniotomy. Recovery.*

Adolph L., age 65, entered St. Luke's Hospital July 3, 1905.

History. Patient has had a large left inguinal hernia for about thirty years. He states that he has worn a truss for fifteen years, and that during the last five years it has failed to retain the hernia completely. Examination while the patient is standing shows that the hernia reaches the bottom of the scrotum and is larger than two fists. The external inguinal ring and the inguinal canal are very large, admitting readily two fingers. There is marked impulse on coughing. When erect, the tumor reaches from the bottom of the scrotum upwards and outwards, near the anterior superior iliac spine. When reclining, the scrotal enlargement nearly disappears. The tumor between the external ring and the anterior superior spine does not disappear, but becomes less prominent. If an effort to rise is made when the patient is reclining, the inguinal tumor becomes very prominent and its walls quite tense. On percussion, it has a uniform tympanitic note. Compression of this tumor causes diminution in size, but not complete disappearance.

Both testicles are in the scrotum; both are normal in size, position, and consistency. The patient complains principally of a feeling of dragging and weight in the abdomen, and has entered the hospital for the purpose of securing relief through operation.

Operation. On July 7, 1905, under ether anæsthesia. The usual incision employed in herniotomy was made, exposing the external inguinal ring and the cord. A hernial sac was found extending from the external ring down into the scrotum. The relation of the testicle and cord to the sac showed that the sac was acquired and not congenital. After freeing the sac from its attachments up to the external ring, it was opened and found empty. The aponeurosis of the external oblique was then incised from the external to the in-

ternal ring, exposing the neck of a second sac. Further division of the external oblique showed this second sac to be about 3½ inches in length and connected with the first or inguinal sac, both sacs opening into the abdominal cavity by a common orifice which admitted two fingers. The second sac lay underneath the aponeurosis of the external oblique, resting upon the internal oblique. When opened, it contained a loop of intestine about six inches in length, which was not adherent, and which was readily replaced into the abdomen. The two sacs were drawn outwards, the common neck loosened from the internal ring, a purse-string suture was passed around it, and the sac removed by cutting through this neck. The abdominal cavity was closed by tightening the purse-string suture. The operation was completed by Bassini's method for radical cure of hernia. Healing by primary union, with cure of the hernia.

This case represents the commonest form of interstitial hernia. The classification of these hernias is based upon the position occupied by the interparietal sac. Any hernia in which a portion of the sac is placed in the planes of the abdominal wall is called interstitial or interparietal. Taking this definition, we find, clinically, that the inner sac has been found: 1. Between the peritoneum and transversalis fascia; the so-called properitoneal hernia, which represents the rarest type of interstitial hernia. 2. Between the internal oblique and the aponeurosis of the external oblique muscles. This is the most common form, and was first described by Goyrand (10), and called by him hernia inguinointerstitialis. It is also termed hernia inguinosubfascialis by Strubel. 3. The parietal sac may lie between the skin and the external oblique. This variety was first described by Kuster (11), and termed hernia inguinosuperficialis. In this type the superficial sac may pass upwards toward the anterior superior spine of the ilium, or may reach downward onto the thigh, as in Busch's (12) case. In Broca's (13) case it extended upwards and inwards toward the umbilicus. In other cases the sac has been found as far down as the perineum. In women it frequently is found beneath the skin of the labium.

In Etiology, the three types of interstitial hernia have much in common. Much of what has been said concerning the cause of properitoneal hernia applies to the subfascial and superficial varieties. The congenital pouches of Rokitansky, of course, cannot be considered as an etiological factor. Abnormalities of the testis occur frequently. McCready's tables show that about seventy-three per cent of the cases are associated with arrest of descent, or some other abnormal condition of these organs. Moynihan considers retained testis as the most important cause of interstitial hernia. This is accomplished by the testis obstructing the inguinal canal, there barring the descent of the hernia, which, in the end, causes bulging of

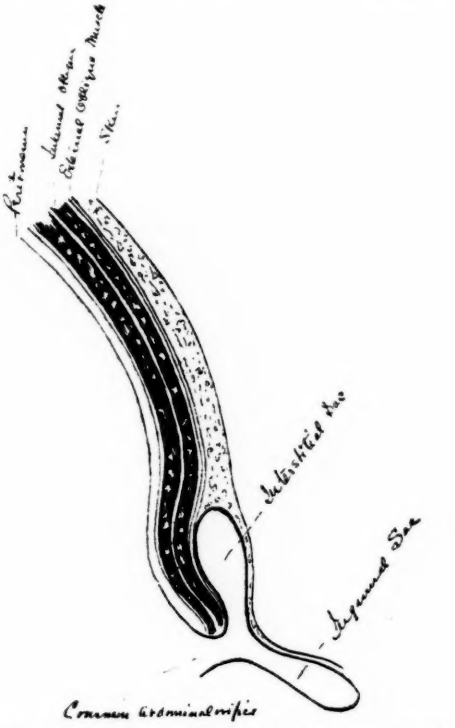

Fig. 3. Inguin.-interstitial hernia, third type. Hernia Inguino-superficialis of Küster.

the sac in the direction of least resistance. In these cases, as in properitoneal hernia, the use of an improperly fitting truss would appear to be of importance as a factor in developing the diverticulum that forms the interparietal sac.

The Diagnosis of interstitial hernia is generally easily made, if the anatomical types of hernia are kept in mind. The bulging parietal sac can generally be easily recognized. The frequent association of this form of hernia with

anomalies of the testes should direct attention to the possibility of this hernia when imperfect descent of these organs exists. Strangulation of the subfacial and superficial types, unlike that of the properitoneal, is infrequent.

The treatment of interstitial hernia, including the properitoneal type, can be only operative. The wearing of a truss can do nothing but harm. The presence of a retained testis is always a contraindication to the use of a truss in any hernia. When a parietal sac exists, it can only increase the already great risk of strangulation.

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NON-LITHOGENOUS OBSTRUCTION OF BILIARY DUCTS

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A FEW years ago the appendix was the focal center of discussion. This subject was discussed by the most noted surgeons and physicians of the world, and the literature on appendicitis and its management would make a library of many volumes.

The usual phases of appendicitis were thus made recognizable, and an almost unity of opinion as to the proper treatment of this disease was thus brought about. Later, the trend of investigation has been centered in the biliary tract, and the progress here has been equally noticeable.

For years, gall-stones were the only condition that received much attention from the pathologist and surgeons. Stones in the gall-bladder and common duct were looked upon as the cause of most of the later, then recognized, diseases of the biliary tract.

Further clinical study operative and post-mortem findings have demonstrated beyond doubt that these foreign bodies (stones), when such exist, are the results of a pre-existing disease of the ducts and gall-bladder, and that in the great majority of instances this disease was of bacterial (inflammatory) origin. It was claimed that those of sedentary habits, and insane patients, were especially prone to the formation of gall-stones, and that at post-mortems a large number of gall-stones were often found in patients who had died of other diseases, and who, during life, had not manifested any symptoms of gall-stones. This later statement is used by some, even to-day, as an argument against the surgical management of these cases.

Our text-books, up to within a very short time, have been misleading, both in the interpretation of manifested symptoms, in the manner of detecting by examination evidences of diseases in the biliary tract, and in recommending the proper management of these cases when diagnosed.

It was advised that an operation on these ducts or gall-bladder be not performed, unless:

1. Jaundice was severe and persistent.
2. Colic lasting and of frequent recurrence.
3. Evidence of an abscess in gall-bladder.

All very late manifestations of biliary tract diseases.

Gall-stones do not form in a few days; they are late manifestations of a pre-existing disease. The gall-stone cases we are all familiar with when they present the typical history.

It is the unusual features of the pathology in this location that we are endeavoring to solve and remedy at this time. There is a large

class of cases coming under the general head of non-lithogenous obstruction of the biliary passages of which we are not so familiar, and to this variety I desire to call attention in this paper.

A stricture of the common duct may have its origin in the long incarceration of a stone, the stone later passing into the duodenum or ulcerating into the bowel. In that event, no stone would be found at the time of operating. Numerous instances of this kind have been reported. This class of cases would be hard to understand at the time of operation, unless a carefully gotten clinical history was obtained. Such a case I report in No. 1.

CASE 1. Mr. W., aged 55. Three years ago this gentleman had several very severe attacks of gall-stone colic, followed by jaundice; the last attack of colic being followed by a persistent jaundice; no stones could be discovered in the fæces for weeks following the attacks. Two years ago, after an attack of "fever," accompanied by severe tenderness in region of pylorus, he passed a large gall-stone. His symptoms got better, and his jaundice, in part, disappeared for a few weeks, then reappearing as severe as before the stone was passed. When I first saw him he was almost of a chocolate color, the jaundice was so intense. A large pyriform fluctuating enlargement was easily discernible in the region of the gall-bladder. Operation revealed a gall-bladder that held four pints of bile and mucus. A careful search for a stone failed to find one. Just where the common duct passed behind the duodenum was an indurated mass that was evidently the site where the large stone had ulcerated into the duodenum, and in healing had formed a complete stricture of the duct at this point. The duct was very much dilated above this point. An anastomosis was made between the gall-bladder and the jejunum. His symptoms have all disappeared, and three years later he reported himself entirely well.

The stricture in those cases following an injury to duct from an impacted stone are usually more defined to the examining finger, owing to the dense adhesions resulting from the inflammation changes surrounding the duct.

The cystic duct strictures may form from the same causes that produce obstructions in common duct; in fact, there exists much more favorable conditions for the formation of a stricture here than elsewhere in the biliary passage; there exists more dense surrounding strictures to become inflamed, and thus compress the duct; there is no constant flow of an aseptic (bile) fluid to clear the canal of any bacterial invasion from the intestine, or to wash away any sedimentary nucleus that only too often acts as a destructive agent to the protective epithelium of the mucous membrane, thus permitting bacterial invasion to the deeper layers of the tract. An obstruction, when once started in cystic duct, will, in all probability, continue to form until the canal is obliterated. Thus we have the gall-bladder with its natural function cut out of the bile circuit, and its cavity filled with the product of its own manufacture or that due to the presence of infectious bacteria, thus converting this sac, that naturally has a daily interchange of its contents with healthy bile, into one with no outlet. The progress is either one of a cholecystitis obliterans with the destruction of the mucous membrane and hyperplastic thickening of the viscus wall, or the gall-bladder becomes a retention cyst, dilating to an enormous size in some instances, as in one of my cases the gall-bladder held over three or more pints of a serosanguinolent fluid.

In the obstruction of the cystic duct at the time of operating, one of four methods of dealing with the condition is resorted to. If the obstruction is one of recent date, and due to a purely inflammatory (acute) process, the opening of the gall-bladder after stitching it in the parietal incision, followed by drainage, may be all that is necessary, as with the subsidence of the acute process the canal becomes pervious, and bile will begin to flow freely from the established fistula when this end has been attained.

Drainage of the gall-bladder externally will become less and less a procedure resorted to as we appreciate more that the gall-bladder, like the appendix, when full of strictures, is best taken care of in a specimen-bottle filled with a good preservative.

The chronic cases, when the gall-bladder is a mass of scar tissue, contracted, thickened, and obstructed, a cholecystectomy should be performed. A third method, and one that usually brings results that are all that could be desired, is by making an anastomosis between the gall-bladder and some part of the intestinal canal, the jejunum being the preferable site.

A class of patients will be met with occasion-

ally who are in a desperate physical condition, and in no shape to stand a prolonged surgical procedure, in whom, at time of operating, an enlarged gall-bladder is found surrounded by firm vascular adhesions, and in whom no stones can be found by palpation in common duct, yet that canal is obstructed; in such cases a cholecystectomy would be the proper procedure.

In making the anastomosis I believe that the Murphy button gives the largest opening, the most permanent and satisfactory results.

This operation, in properly selected cases, is to be preferred to all other methods of relieving the individual of his burden of taking care of the bile in his blood. Many cases of narrowed pylorus and dilation in the stomach have their origin in adhesions surrounding biliary ducts, and are relieved by a proper separation of the adhesions and removal of the cause of the adhesions.

There is a class of cases presenting an obscure train of symptoms pointing to the vicinity of gall-bladder and biliary ducts as their source; as, a vague sense of uneasiness, occasionally painful spells lasting a few minutes, with attacks of indigestion and painful flatulency. At the operation no stones are found, no stricture of the ducts is discovered, no visible changes in gall-bladder are discernible in fact, nothing is detected except a few adhesions between cystic duct and common duct or duodenum. A separation of these adhesions, with a liberation of the bound-down ducts and viscus from the constantly nagging, distended stomach and intestines, will, as a rule, bring relief to the patient.

The all-important question of early diagnosis is ever present in all pathological process. A diagnosis in the early history of most surgical cases would rob those cases of their later destructive process to the organ affected, and ward off damage to remote organs. A simple process by time and complications becomes one of danger, and much more difficult to deal with surgically. Add to a delayed diagnosis, professional tardiness in recommending the proper method of relief, and the opposition of the patient to accept the proferred relief, and we have all that is necessary for the development of serious complications. It makes

Demonstrating technique of operative procedure.

the surgery difficult, attended by a too high mortality, and a failure often to relieve symptoms and a protracted convalescence.

I report this unusual case of non-lithogenous obstruction of common duct to illustrate the remote and irreparable damage to other organs — the spleen and the liver.

CASE 2. Mr. R., aged 21. At the age of three years this young man's parents noticed that he was jaundiced, and even before that time he had attacks of pain, very severe in character and of long duration. These attacks of " colic," so called, continued to recur at irregular intervals, to be followed by an increase in the jaundice. The skin has never cleared entirely since the beginning of his attacks. The stools have at times been acholic, but, as a rule, there has been evidence of some bile in the fæces.

When I first saw him, I found him jaundiced, poorly nourished, careworn, and exhausted. Pulse 58; temperature 97.50°; poor appetite, inability to digest much fatty food; stools only faintly bile-stained; urine, specific gravity 1035, loaded with bile.

Examination. Abdomen enlarged on left side, dullness over area from rib border to crest of ileum. No tenderness on firm pressure at any point. Nothing abnormal in liver or gall-bladder region could be detected on palpation or percussion. No fluid in peritoneal cavity.

Diagnosis. Common-duct obstruction, probably congenital or cicatricial; enlarged spleen, as result of circulatory interference in liver.

Operation. Usual parietal incision for a common-duct operation. Tissues, when cut, looked like a carrot. Bleed very freely from smallest of vessels; spleen enlarged, not nodulated; gall-bladder thickened and slightly en-

larged. No stones in gall-bladder or in any of the heptic or common ducts. Just where the common duct passed under the first portion of the duodenum, the duct was hard as a tendon, and appeared to be in very much the same pathological condition that is found in appendicitis obliterans (cholangitis obliterans). The gall-bladder was opened and explored carefully with probe and by irrigation to establish the patency of cystic duct. An anastomosis was made by the aid of a Murphy button with upper portion of the jejunum. His recovery was the usual one of a successful abdominal section. The stools soon became bile-stained, his skin began clearing at the end of three days, and at the end of five weeks was quite clear for a skin that had been bile-stained for eighteen years. His appetite for fats developed soon, and his weight rapidly increased. His attacks of pain disappeared. I heard from him this week, one year after the operation, and he weighs 160 pounds and is feeling fine. The button in this case passed on the seventeenth day after the operation. This case is of much interest because of the character of the pathology, duration of the same, and the rapid restoration of the patient's health. The changes in the liver and spleen produced by the long-continued duct obstruction, I am afraid, are of such a character that a permanent and satisfactory cure will not be obtained in this case.

Traumatism in the vicinity of the ducts may lead to a stricture of the duct, as the following case illustrates.

Mr. ——, aged 55. Some three years ago received a kick over the liver, from a horse; this led to a severe attack of localized peritonitis. His symptomatic recovery was tardy. One year ago he began having pain in the region of the gall-ducts, and soon a jaundice developed, that has persisted up to the time I first saw him. An operation revealed extensive adhesions, and the canal of the common duct obliterated for an inch and a half. An anastomosis was made between the gall-bladder and the jejunum; his pain, jaundice, and other symptoms disappearing from that time to the present, two years later.

CASE 3. Mrs. T., aged 45. This lady, for two or three years, has had severe digestive disturbances; for the last six months she had repeated attacks of uneasiness and tenderness in region of head of the pancreas, and during this time she has developed an ascites and a continuous jaundice, with much loss of weight. In fact, the history is one of a malignancy in the pylorous or head of the pancreas. An operation revealed a distended gall-bladder and dilated common duct; the head of pancreas was much enlarged and hardened; there were no stones to be found. The pancreatic enlargement had completely closed the duodenal opening of the common duct.

A cholecysenterostomy was performed. The symptoms disappeared, and up to this time, one year later, have not recurred.

This was a case of chronic pancreatitis which involved the ductal opening into the duodenum. I recall another case in which there had been a local peritonitis involving the common duct, the adhesions bending the duct to such an extent that a recurring jaundice extending over a period of years was a feature of the case; more or less pain being present all the time. This case was completely relieved by breaking up the adhesions and straightening out the duct.

The cancerous invasions of the duct in this location are frequently due to some unrecognized benign pathology that has persisted for years, the late manifestations simulating very closely lithogenous obstruction, a diagnostic feature of cancer being a gradual and continous jaundice when once completely established, differing in this respect from the ball-valve stone action in common duct. One source of transient jaundice that may lead to a diagnosis of lithogenous obstructions is a displaced right kidney, the pedicle of which, in its abnormal position, may elbow the common duct and produce a jaundice.

The symptoms of this condition are not sufficiently typical in all cases to warrant a diagnosis of the exact character of the pathology causing the obstruction. However, the presence of an imprisoned gall-stone in the duct is usually accompanied by sufficient symptoms to indicate its presence, and the discovery of a displaced kidney will point to the probable source of the icterus.

A patient, having escaped the acute septic process of an invasion of the colon bacillus into the deeper structures of the common duct and gall-bladder, may, at a later period, de-

velop symptoms due to the later mechanical effects of this inflammatory process, either in the form of a stricture of common duct, or if the process has run a chronic course, there may be a cholangitis obliterans, thus closing the duct. I have seen two or three such cases. Drainage of the gall-bladder into the jejunum has relieved them all.

As we learn more of the pathology located so frequently in the duodenum, we are better able to understand some of the obscure symptoms pointing to that locality as their source. Ulcers in the duodenum located near the entrance of the common duct in their healing process may include this opening in the cicatrix and produce a closure of the duct, and thus produce the usual train of symptoms that accompany the closure of the duct from any cause.

Of much value is the clinical history in these cases, as the symptoms and history are somewhat at variance with that of a stone-obstructed bile-duct.

Appendicitis obliterans has long been recognized, but the same pathology in the common bile-duct is a comparatively recent acquisition to our knowledge in this locality. I have seen a few such cases where, at time of the operation, the duct rolled under the finger like a tendon, so completely was the normal structure destroyed by the chronic cholangitis.

If the obliterative process is confined to the common duct, which is rare, there will be present a persistent jaundice, the intensity of which will depend on the completeness of the obliteration. With the jaundice will be the usual train of adhesive symptoms in this locality, as gaseous distention of the colon, interference with stomach and intestinal digestion, painful peristalsis, etc.

If the obstruction is located in the cystic duct, and the gall-bladder escapes the usual contraction due to the presence of a cholecystitis, this viscera may continue to manufacture mucus, and if infected (as it usually is), a mucopurulent distention takes place, and a pyriform retention cyst is produced, usually detectable below the border of the liver in these emaciated patients.

In this condition, jaundice is absent, and the patient will have fever, and stomach and intestinal digestive disturbances. These cases are especially liable to recurring attacks of fever, as the absence of bile in the gall-bladder robs nature of one of the most efficient inhibiting bactericidal fluids. These are fit cases for a cholecystectomy, as drainage of the gall-bladder is too uncertain in its curative effects, the opening either refusing to close, or if it does close, the symptoms are renewed.

Stricture is invariably the late manifestations of some previous pathology, as a healed ulcer, or from stone pressure. These strictures may be complete or partial, extending for only a few lines to an inch or more along duct. The symptoms vary according to the situation of the obstruction and condition of the adjoining structures and organs.

The growths leading to an obstruction of the bile-ducts are of the same character as those found in other parts of the abdomen, the malignant neoplasms predominating, and giving rise to a train of symptoms hard to diagnose, early, from a ball-valve stone in the common duct; a characteristic feature of the jaundice produced by a malignant growth being, when once well established, intense and persistent, the patient showing more severe and early constitutional effects in the malignant cases.

Where the complete obstruction of the duct is the outcome of a long impacted stone resulting in a cancer, the diagnosis of the latter is extremely difficult prior to operation. Cancerous obstruction occurs most frequently in the lower portion of the common duct; the location of most lithogenous obstructions, also.

In determining the existence of an obstruction, its location, extent, and character at time of operating, I have for fourteen years resorted to hydrostatic pressure, by introducing through an aspirating needle into the gall-bladder a saline solution from a moderate height, or if this vicus has been opened, the nozzle of an irrigating-syringe, or if the common duct has been opened, by irrigating directly into the duct.

In cases where the duct is imbedded in a mass of adhesions and has lost its identity, it can be made to stand out distinctly by water-pressure introduced through gall-bladder, provided the cystic duct is patent; by this same

process the patency of the duct, after removal of one or more stones, can be determined, as I have on several occasions run rather a large quantity of saline directly into duodenum through gall-bladder, cystic and common duct. As a means of determining the security of the duct-stitching where the opening in this canal is closed by suture, this method is invaluable. disappearing stones and other *débris* can thus be washed out of the biliary tract. I am sure if this simple, safe, and efficient procedure were carried out more frequently, there would not be so many post-operative biliary fistulæ or failures to remove the obstruction, nor would so many secondary operations be required.

TREATMENT OF VARICOSE VEINS

By C. H. MAYO, A.M., M.D [1]
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THERE are many operations in use at the present time for the relief of varicose veins. The disease is one that manifests such diverse conditions and symptoms that no method can be suited to all cases.

While the superficial veins are usually considered as producing the symptoms, it is probable that the deep veins, from the thinness of their walls, are often involved.

The veins usually affected, with their various tributaries, are the long or internal and the short or external sapheni. The internal extends from the saphenous opening in the upper part of the thigh down the inner side of the leg to the ankle, where, through the dorsal vein of the foot, it connects with the external saphenous vein, which extends from the external maleous to the popliteal space, where it penetrates to the deep veins. The two sapheni communicate at the knee; here, also, the internal communicates with the deep veins. The external occasionally extends higher, joining the veins of the outer and back part of the thigh. There are a number of valves in the large veins to aid in the support of the blood-column. The internal saphenous nerve accompanies the vein from below the knee down; the external nerve is in relation with the external vein in the lower part of its course.

In most cases it is difficult to attribute any cause for varicose veins. The most probable ætiological condition is that there exists a congenital defect in the vein-walls, valves, or the enervation; in fact, it is a considerable question whether normal veins give way under the ordinary strain of life. A large number of those affected have dilated or enlarged veins at from twelve to twenty-five years of age, although many years may pass before any serious consequences arise, and others do not suffer from any disabling symptoms during a long lifetime. Vocation may often increase the condition and symptoms. Some patients attribute pregnancy as the cause; others, the pressure of tumors, phlebitis, or injury. There is also a type of the disease with multiple areas of dilatation of the fine veins, like small nævi.

The common symptoms are a sensation of fullness or weight of the leg, œdema from standing positions, and pain from nerve irritation. The discomfort increases in severity with the use of the limb. Distention of the veins is usual, and in many cases there is a venous circulation in the thigh, unchecked by valves, and continuous with that in the deep vessels. More or less annoying pruritis is usually present, and is often accompanied with eczema. Pigmentation and discoloration of the skin from local hemorrhages is frequent, while one or more ulcers may increase the discomforts of the sufferer.

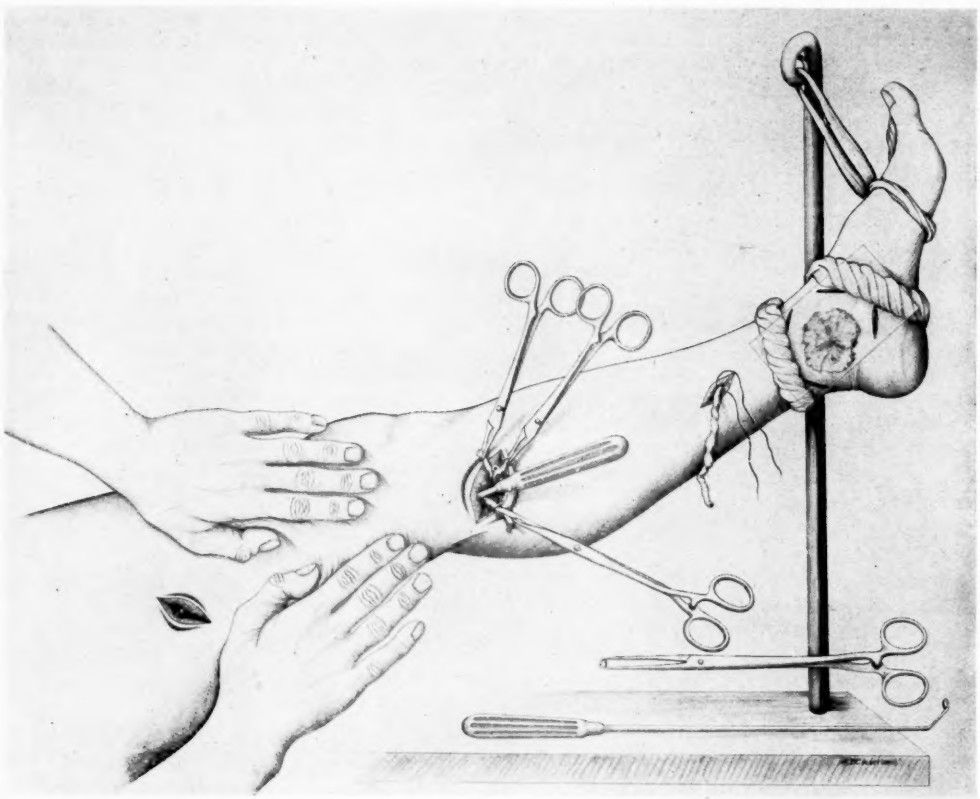
Many patients come for relief, knowing their trouble and its cause; others describe symptoms resembling those of sciatica or even flat foot,

[1] Read at 1906 meeting of the Western Surgical and Gynecological Association.

and it is possible that there may be some relation between the disease and late appearing flat foot.

The so-called Trendelenburg phenomenon is tested as follows: The leg is elevated with the patient lying down, and when the veins are empty the long saphenous is compressed at its upper portion; the patient now stands erect, the pressure is removed, and if the vein fills from below up, the valves are intact; if the wave of blood descends, the valves are useless, and the veins sustain the venous gravity blood-pressure from the heart down, and for such the Trendelenburg operation is indicated.

In a few cases it is possible to obtain sufficient relief by a change in vocation or climate. The more common method is the wearing, during the day, of elastic supports, such as bandages or stockings. Leander's truss for the same purpose is worn to produce pressure on the saphenous in its upper portion. Operative measures for relief are as old as the history of surgery. Most of the known methods still have their advocates, and as they represent various principles in surgery, we mention several of them.



Representing the technique of the operative procedures.

Ignipuncture with Paquelin or electrocautery, which is still employed; cutaneous suture and subcutaneous ligation of Valpeau and Delpech, which is now seldom used; injections of irritants into and about the veins, as Paul Vogt's injections of ergotine about the veins;

Durante's method, which is that of passing catgut soaked in Piazza's fluid of sodium and ferric chloride into the vein through a canula; the resection of a portion, or the entire length, of the veins involved; Casati's operation by multiple ligation and excisions; multiple incisions with torsion removal (Bristol method); longitudinal incisions with immediate closure (Ledderhose); circular incisions of Schede and Peterson. Probably the most popular operation is that of Trendelenburg, who ligates and removes a short section from the upper portion of the long saphenous. The more recent methods are subcutaneous removal in suitable cases, and nerve-stretching.

As a rule, thrombosed areas, while inflamed, have been treated by posture and local applications, although Kramer recommends their excision. In deciding the advisability of operation in cases which give a previous history of severe phlebitis involving the deep vessels, we apply an elastic bandage from the foot to above the knee. If this bandage can be worn with comfort, an operation should give relief. If the bandage causes discomfort, it is probable that the superficial vessels are necessary to the circulation of the limb.

In considering the indications for operation, there is less benefit to be expected from any type of operation made below the knee, if the vicious venous circulation of the thigh exists, while the Trendelenburg method could hardly be expected to cure cases of disease of the external saphenous, or even the lower internal saphenous, where there are large channels of communication with the deep or external vein.

We have operated upon 185 cases of varicose veins, many times operating upon both limbs. The complete Schede operation we have not made for several years, but a partial Schede or oval or interrupted incision above or about a large ulcer is frequently made, combined with the excision of the ulcer and skin-grafting; at the same time the Trendelenburg operation, or the more extensive excision of the internal saphenous vein from the upper third of the thigh to a point six or eight inches below the knee, is also performed. The removal of short venous areas is reserved for those cases of involvement of the veins of the posterior thigh or the external saphenous. We have always been partial to the excision of the long saphenous for the majority of cases. The earlier operations were by a long incision of the vein. It required a considerable time to close the wound, and seemed to be quite a serious operative procedure, especially in the time involved to accomplish what should apparently be the trivial removal of superficial veins. This we partially overcame some years ago by long incisions, both in the thigh and in the leg, leaving five or six inches of skin intact at the side of the knee. The vein was separated above and below, and under slight tension a pair of forceps was employed to enucleate and loosen the vein in the uncut area. Gradually the method of subcutaneous enucleation was increased until the whole vein was removed by means of three to five incisions of one inch in length. More recently we have devised a ring vein-enucleator, which consists of a quarter-inch ring of steel with a long handle, the whole instrument being not unlike a blunt uterine curette bent to an angle near its tip. We have also had made for the same purpose a pair of long forceps, which form a ring at the end when closed.

The vein is sought for and severed in the upper third of the thigh. The proximal end is ligated, the lower end is passed through the ring of the enucleator or placed in the ring of the forceps, and clamps are placed on the end of the vein. By a gentle pushing force, the vein being held to make tension and the tissues steadied on either side by an assistant, the ring or forceps is pushed down the vessel for six or eight inches, tearing off the lateral branches, when the point of the instrument is forced against the skin from beneath and a small incision is made to the ring or forceps, which is pushed through the opening, holding the vein like a thread in a needle's eye. The vein-loop is drawn out of the opening and also from the instrument, which is removed, rethreaded on the vein, and again forced through the new opening, following the vein, and is pushed down to a lower point, where the small incision is again made and the process of removal repeated. The small lateral branches are torn off, and, as a rule, have enough muscle structure to close themselves. Should the main venous trunk break, a new incision is made below the knee,

the vein exposed and divided, and the enucleation made in both directions from this point. Below the knee the branches are larger and the vein is more adherent, being more superficial, so that a shorter distance must be traversed.

If it is found that calcareous deposits, sacculations, or extreme weakness of the walls render the case unsuited to the enucleation method, and this occurs in about ten per cent of the cases, the principle of operation should then be changed to an open method, undermining only the section by the knee.

Hemorrhage is avoided, first by position. An ordinary gynecological standard is placed in position, and the leg raised in straight or extended position and supported by the ankle. The position renders the limb partially bloodless, and also secures elevation and accessibility of the field of operation. Should any branches cause more than ordinary hemorrhage, it can be checked by a pressure-pad held against the skin over the region from which the veins were removed, or by small packs, which are left for a few minutes in the incision from which it arises.

We have tried the inversion of the veins — Kellar method — but found that ordinary forceps would subcutaneously loosen and torsion out short lengths without much difficulty.

When necessary to skin-graft an excised ulcer, we apply a twisted roll of gauze about the leg above and below the grafted area to support a sheet of sterile celluloid or wire gauze held in place by a strip of adhesive. The final bandage is applied from the foot to the body, and a small area is cut out over the protective. This serves as a window through which to watch the condition of the graft, which usually unites with one dressing.

In our experience, the subcutaneous removal of that portion of the internal saphenous vein extending from eight inches above the knee to four inches below accomplishes by one method all that it is possible to gain by either the Trendelenburg or Schede in interruping the main channel of superficial circulation and also checking communication with the deep circulation in this region.

Should there be a persistent eczema in spite of previous preparation, the operation is proceeded with as usual, the ulcer being excised before enucleation of the vein. The ulcerated area is skin-grafted. The eczematous area is now painted with compound tincture of benzoin or an acetone solution of gutta-percha after Murphy's plan, which acts as an aseptic varnish, literally sealing this surface until the incisions have themselves become sealed against infection. The dressing is applied, and the leg is maintained in a somewhat elevated position for twelve days. The patient is then allowed to get up, wearing an elastic porous supporting-bandage for a few months.

The method outlined has reduced the time for operation very considerably, and has placed it in the class of relatively trivial operations, when uncomplicated by sepsis or embolism.

As to the cures from the various methods, Goerlich reports, from 42 operators, 1,425 cases, with from 65 to 85 per cent of cures from the ligation of the internal saphenous. In this report upon the latter results, from one to eleven years following the Tredelenburg operation there were 51 cases, representing 69 operations examined, with the result that 84 per cent were satisfactory and 16 per cent failures. The report by letter from 29 patients, representing 39 operations, gave 70 per cent satisfactory, 30 per cent failures, or worse. The Trendelenburg phenomena recurred in 42 cases after excision of a piece of saphenous.

The first, probably, is a fair statement of the cures resulting from one method or a combination of methods, but the percentage of failures is somewhat high, as some are much improved, though not well. The causes of recurrence were from a widening of the collateral veins, formation of new veins, and, it is claimed, from regeneration of the saphenous itself. It is probable, in the latter cases, that the more superficial and smaller vein often noticed in the same region has been removed or has dilated and practically formed a new saphenous. The dangers are from pulmonary embolism, which Goerlich reports as recurring twice in 108 cases in Von Brun's clinic. Sepsis is rare, although a serious possibility, and difficult to guard against in some cases with ulcer and eczema.

TORTICOLLIS

By W. W. RICHARDSON, M.D., Los Angeles, California

THE terms "torticollis," "wryneck," or "caput obstipum," should be confined to those conditions in which an unnatural position of the head is caused by contraction of the muscles of the neck. Similar positions of the head, caused by disease of the cervical spine, cicatricial contraction of the skin, following burns, ulceration or phlegmon, or inflammatory conditions in other structures of the neck, should not be included under these terms. The affection may be separated into two general divisions—the myogenous, in which the muscles themselves are the seat of disease, and the neurogenous, in which the contraction of the muscles is due to nervous influence.

Myogenous torticollis embraces a number of affections of the muscles, having in common an interference with their elasticity, and a greater or less degree of contracture or shortening. This may be without demonstrable change in the muscles, as in the myalgias, rheumatic or traumatic, or with grave lesions, as in the different forms of myositis.

The common form of acute wryneck, or myalgia cervicalis, is usually styled rheumatic, and probably depends, to some extent, upon exposure to cold as its exciting cause. It is characterized by muscular pain, resulting in functional disturbance, but shows no demonstrable anatomical lesion. Whether the condition is due to a hyperæmia of the neurilemma, as advanced by Vogel, or to a mild infection, as Leube believes, it is transitory in its nature, and seldom leads to permanent contractures.

The traumatic myalgia is very closely allied to this form, but probably depends upon slight rupture of the muscular fasciculi. It is distinguishable from the rheumatic only in its manner of onset, suddenly, in the midst of muscular exertion, and by its less wandering tendency. Both varieties recover without treatment, but hot applications and massage may hasten recovery.

Acute inflammation of the neck muscles is not of frequent occurrence, but may appear as the result of trauma, extension from neighboring parts, or by metastasis during acute infectious diseases. The symptoms are those of acute inflammation in general, and the function of the muscles is affected according to the extent of the disease. Subsequent permanent contractures may result, depending upon the amount of tissue destroyed and replaced by shrinking scar tissue.

Of the chronic forms of myositis, tuberculosis and syphilis may be mentioned. Gumma affects the sternomastoid more frequently than any other muscle, excepting the tongue. Of sixty-nine cases of muscle gumma collected by Heinrich Lorenz, twenty-six occurred in this muscle.

The form of chronic myositis, which is of most interest, as playing the most important rôle in the causation of muscular torticollis, is the myositis fibrosa, or interstitialis. This variety has assumed especial importance since the investigations of Mikulicz and Kader have shown its invariable presence in all cases of congenital torticollis. While this disease may occur primarily without any assignable cause, it is usually secondary, and the most frequent exciting cause is trauma. It may develop after ischæmia due to pressure, or may follow upon the healing of muscle abscess, or upon non-suppurating myositis, rheumatic or gonorrhœal, or from any chronic irritation, as trichinosis.

In cases of slight injury, in which no great loss of substance has taken place, the muscle lesion will usually heal by regeneration of muscle tissue, leaving no scar, and hence no contraction. In fact, even considerable loss of substance is not followed by contraction or functional disturbance. Some other factor must, therefore, be added to the trauma to set up the proliferation of connective tissue resulting in such extensive contractions. This factor is probably to be found in an infection resulting in a chronic myositis. In all cases of torticollis due to myositis, in which the entire course of the disease has been watched, one can observe an acute and a

chronic stage. The former follows immediately, or within a few days, an injury to the muscle, and consists of an inflammatory infiltration of the injured area and its surroundings. The chronic stage develops gradually, and is characterized by the formation of connective tissue and substitution of scar tissue for the normal muscle. The first symptom of this is the increasing hardness of the muscle, in spite of the amelioration of the subjective symptoms and the disappearance of the acute inflammatory reaction. Later, the muscle frequently diminishes in volume, in diameter as well as in length. The chief disturbance now resulting is the interference with the function from the contraction of the muscle. The course of the disease is always very chronic. Gradually, neighboring portions of muscle become involved, healing with scar formation, until in the end the greater part of the muscle may be converted into scar tissue and the process ceases to advance.

In the sternomastoid, the disease usually involves long stretches of individual bundles of fibers, or entire areas of the muscle. Only rarely is the entire muscle affected. Kader found in 21 observations total involvement in but 5.

Most frequently the sternal portion or the clavicular portion is alone affected. The pathological changes in the muscle have been studied chiefly from pieces of muscle excised during operation. Macroscopically, the muscle appears severely affected, consisting of scar-like tissue, which, in advanced cases, is almost white, of firm consistence, creaking under the knife. The less advanced portions appear mottled, as normal muscle tissue is scattered in the white ground substance. On cross-section, islands of muscle tissue are seen surrounded by connective tissue. Complete degeneration without remains of muscle tissue, Kader says, does not occur. Frequently the diseased muscle is adherent to its surrounding, and the neighboring lymphatic glands are enlarged.

Microscopical examination shows everywhere an increase of the interstitial connective tissue, the bands of which run parallel to the long axis of the muscle and push the muscle bundles apart. The muscle fibers which remain are diminished in size, but of normal protoplasm, and retain their cross striæ, for the most part, but in places show hyaline degeneration. In recent cases, remains of acute inflammation are present, the connective tissue is rich in nuclei and blood-vessels, and shows small round-cell infiltration. Micro-organisms have never been demonstrated in the tissues.

Clinically, the most interesting form of myogenous torticollis which comes to our attention is that appearing at birth or soon after, and usually termed congenital torticollis. While this term is applicable to a certain number of these cases, it is not to all, and its use should be limited to those cases which are present at birth.

For many years the theory of Stromeyer held undisputed sway, that all these cases were the direct consequence of injury to the muscle during birth. About 20 years ago Peterson opened the discussion of the subject, disputing this view, and advancing the theory of congenital origin in all cases. About the same time, Volkmann, by introducing the open method of tenotomy, increased the interest in the subject and afforded better opportunity for study of the pathology of the disease. The writings of Witzel, Vollert, Nicoladoni, Lorenz, and Küster increased our knowledge of the subject. In 1895, Mikulicz [1] discussed the subject of etiology in the light of Kader's research into the pathological condition of pieces of muscle excised during Mikulicz's operations. In 21 cases which he examined, he invariably found changes incident to a more or less diffuse chronic inflammation, such as we have described under the head of myositis fibrosa, with further evidences of inflammation in the muscle and vessel sheaths and enlarged glands in the vicinity. He is therefore strong in the conviction that this condition is the actual cause of all cases of this variety of torticollis. In a manner, his views reconcile the theories of both Stromeyer and Peterson, as the myositis fibrosa may be, and in his opinion undoubtedly is, frequently of intrauterine origin, but is also consequent to injury to the muscle during birth. That this process may take place within the uterus is shown by the

[1] Centrablatt für Chirurgie, No. 1, 1895.

examination of pieces of muscle excised from infants but a few days old. As to the origin of this intrauterine inflammation, no very plausible theory has been brought forward. Habitual side position of the head, amniotic adhesions, early fixation of the head in the pelvis, seem rather improbable explanations. Ischæmic muscle paralysis, as described by Volkmann, in postfœtal life, is a quite analagous condition, and that the conditions in utero might be such as to cause sufficient pressure to produce this condition seems probable, but the exact mechanism is only problematical.

The cases appearing after birth admit of easier explanation. That injury to the muscle does frequently take place during birth is shown by the post-mortem examinations in large series of cases. Spencer, in 300 sections of newborn babies, found so-called hæmatomata in 15. Runge, in 64 cases of extraction, found hemorrhage 18 times in the muscle or surrounding tissues. Gowers, in 106 cases of these hæmatomata, saw torticollis develop in 21.

That difficult labor is responsible to a great extent for torticollis, is shown by the histories of these cases, which reveal, in a large majority, complicated labors. In 43 of Witzel's cases, 25 were artificial delivery. Over one half of Fridberg's cases were breech-presentations. Pfeiffer, in 38 cases, found 19 breech or footling, and the 11 head-presentations were, with few exceptions, difficult labors; 3 cases were delivered by turning and extraction, and 4 by forceps. Küster has demonstrated that no great force is required to produce injury; that natural rotation during spontaneous birth may cause rupture. That the tumors along the sternomastoid, so frequently seen after labor, are really hæmatomata is disputed by Mikulicz, who believes they are in reality already a beginning myositis fibrosa. That they frequently disappear without causing contraction of the muscle, numberless observations have shown, but many cases are followed by permanent contraction. Possibly, individual disposition to formation of scar tissue is here a factor, as is seen in keloid formation in later life. Mikulicz calls attention to the unusual frequency in these cases of excessive scar formation after operation amounting to keloid formation in the incision, and even in the stitch wounds. In this connection it would be interesting to observe if caput obstipum is more frequent in the colored races, who are so prone to keloid formation. As far as my observation goes, this is not the case. Heredity of the affection has been repeatedly observed. Hautke reports a mother and her two children with wryneck, and two sisters in another family.

The sternomastoid is the muscle most severely affected. It is contracted, and usually diminished in size. The sternal portion is most frequently involved, but the clavicular portion is frequently affected. The muscle may show all gradations from apparently normal to conversion of the greater part of its length into tendinous tissue. The secondary changes in the soft and skeletal parts of the head and neck are of interest. The cervical vertebræ form an arch with its concavity toward the affected side, the contracted sternomastoid stretching across its concavity as a tense band. There is also some scoliosis of the dorsal and lumbar vertebræ in old cases. One of the most interesting secondary changes is the asymmetry of the skull and face, which has been studied with care by Witzel. These changes correspond to scoliosis of the face and skull, with the concavity toward the diseased side. The soft parts and the bones show more or less pronounced atrophy of the affected side; that half of the face being lower and broader, the opposite side being longer and narrower. The vertex of the skull is likewise changed, its usual oval outline appearing flattened. Witzel explains this asymmetry as due to the traction of the hyperextended muscles. Milo thinks it due to the changed static relations of the skull and the modified direction of pressure of its contents, while Völckner, holding to the intra-uterine origin of the wryneck, believes the asymmetry to be due to the same intrauterine conditions which cause the disease, whatever they may be, rather than to any secondary changes due to atrophy or pressure. While some asymmetry may be present at birth, it is not until later that it becomes marked, increasing with time, proving that muscular traction and changed static relations bear the most important part in its causation.

The amount of deformity in torticollis is

directly dependent upon the shortening of the muscles affected, and therefore depends upon the degree and situation of the disease. The sternomastoid being the muscle mainly involved, the head is drawn strongly toward the affected side, and the face at the same time turned in the opposite direction. An attempt to straighten the head meets with resistance, and the muscle stands out prominently, but no pain is complained of. Active and passive movements are limited by the contracted muscles. Lorenz has distinguished two types of position. In the simple type, the center of gravity of the head is displaced toward the diseased side, the head as a whole showing a strong inclination toward that side, with only slight rotation. In the complex type, the inclination of the head as a whole is less, but the rotation of the face toward the sound side more marked, the ear approaching the shoulder. The head as a whole is displaced toward the sound side. These types are only degrees of the same condition, the simple type being the primary stage. It may persist, but usually passes with time into the complex variety. The asymmetry of the face varies greatly in degree, but is usually noticeable. The right side of the neck is more frequently affected than the left. The deformity is frequently noticed immediately after birth, but usually only after a time, and becomes more striking when the child begins to stand and walk. The degree of deformity may remain stationary, but it usually increases with the growth of the child. The diagnosis presents no difficulties; the condition is evident. Only the cause of deformity may remain in obscurity, if an insufficient history is obtainable.

The prognosis is favorable, in that the disease is a local one, the general health not being disturbed. On the other hand, if left to itself the deformity usually increases and has no tendency to self-improvement.

The treatment of this affection has improved with the general advance of orthopædic surgery, and is now quite definitely settled along certain lines.

Treatment should begin as soon as the deformity is noticed. In young infants, massage and passive motion alone will suffice. The head should be gradually forced into its normal position, stretching the contracted muscles. In slightly older children, the Glisson sling may aid in retaining the ground gained, or permanent fixation of the head by plaster cast, or leather, or felt collars.

These procedures, if persisted in through several months, will frequently lead to success. If the patient is first seen at the age of two or three years, these manipulations must be preceded by division of the shortened muscles. Subcutaneous tenotomy, the procedure formerly considered as classical, has given way to the more exact and safer method of open division. The only advantage of the subcutaneous method is the avoidance of scars, but this is overbalanced by the greater security and greater thoroughness of the open method. Open tenotomy, introduced by Volkmann, must be considered as the normal procedure. The incision of Lorenz, between the sternal and clavicular portions of the muscles, has the advantage of leaving the least noticeable scar. The incision should begin on the sternal insertion and pass upward and outward for 2½ to 3 cm. toward the internal border of the clavicular portion. By retracting the margins of the incision first to the inner and then to the outer side, the two portions may be successively brought into the field and divided. The tissues are then put upon tension by drawing the head strongly toward the opposite side, with counter-extension upon the shoulder, and all tense bands divided down to the jugular vein. After exact hæmostasis, the skin wound is closed and sealed with collodion. This simple operation of tendon division relieves but one of the factors of the deformity. The important scoliosis of the cervica vertebræ remains to be dealt with, and upon this Lorenz lays the most stress. He regards the correction of the cervical scoliosis as the chief indication of a radical therapy, the tenotomy solely as a preparatory act to this end. In fact, in his later reports he seems inclined to limit the tenotomy to the severest cases; in milder cases dividing the muscle subcutaneously, by the hand alone (myorrhexis). He thus describes his modillirende redressement, which should follow immediately the tendon division:[1]

"I grasp the forehead and occiput of the

[1] Centralblatt für Chirurgie, No. 5, 1895.

patient be ween both hands, and force the head gradually toward the other side, at the same time twisting it upon its sagittal axsi. One cannot expect that this succeeds easily and at once; on the contrary, when the cervical vertebræ are stiff, great care and patience are required, as all rough force is, of course, excluded After the head has reached the required inclinat on toward the other side, I place the four fingers of both hands over the convexity of the cervical scoliosis, while the thumbs are placed, one in front and one behind the ear of the concave side. With intermiltent gradually increasing force I bend the cervica arch toward the other side until the ear of the convex side can be laid upon the shoulder of the same side. Direct pressure upon the inclined head from above downward aids considerably in attaining this object. According to the stiffness of the scoliosis, greater or less labor and patience will be required. A short half-hour will suffice to unbend the strongest scoliosis. The procedure is, for the operator, in many cases very laborious. One must take care that the trachea is subjected to no pressure. It is best to work slowly and with moderate force, exactly as if one were remodeling and reforming a brittle plastic mass. In the after-treatment, aside from active movement of the head, mechanical after-treatment is superfluous."

The head is held in the corrected position by a plaster bandage, including the thorax, for 10 to 14 days.

Mikulicz, on the other hand, goes to the opposite extreme, advocating resection of a great part or all of the diseased muscle. In all severe cases he resects the muscle, at least in its lower two thirds, and divides all tense bands of tissue. The scoliosis, he says, may be left to itself, and he dispenses with all after-treatment as superfluous. Even the extensive resections, he says, may be made through an incision no larger than that required for open tenotomy. Hoffe, likewise, resects the muscle in difficult cases, and says the deformity is no greater than by open tenotomy. Fridberg reports 29 cases treated by Mikulicz's method with excellent results. He uses orthopœdic after-treatment. Stumma reports 34 cases treated according to Mikulicz, out of 120 cases in all. In 12, total resection was done; in the remainder, partial resection of one or both portions. These cases were controlled 7 months to 9 years after, in 28 cases. In 14, the position of the head was absolutely normal; in 10, there was a slight deviation still present; in 2, there was overcorrection; and in 2, the deviation was still marked. These two cases had scoliosis and rickets. The scars in all of these cases were satisfactory. In one half of the cases the scoliosis had entirely disappeared.

In view of the excellent results obtained by open division of the muscle, followed by redressement in cases of ordinary severity, it seems probable that Mikulicz's method will be reserved for the very obstinate cases, or cases in which a subsequent orthopœdic treatment cannot be carried out.

In Gussenbauer's clinic a number of cases have been treated by plastic of the tendons with excellent results; the clavicular portion being divided close to the clavicle, while the sternal portion is severed above, at the junction of the two portions. After the correction of the deformity, the divided ends are brought together by suture, thus lengthening the muscle; also, plastic of the opposite muscle, taking a plait in its length, to increase the antagonistic action has been advocated by Wullstein.[1]

The neurogenous form of wryneck, or spasmodic torticollis constitutes a variety quite distinct from the preceding, depending upon certain lesions of the nerves supplying these muscles; the muscles themselves presenting no evidence of disease, save possible secondary changes. The exact nature of the nerve lesion is not well understood, but it is probably central in origin, either in the spinal or cerebral centers. When a group of muscles is involved, especially if the facial muscles, the forehead, or the eyes are included in the spasm, the probability is that the lesion is in the higher centers of associated movement. When only a single muscle or group of muscles is involved, the lesion probably lies in the lower centers, in the bulbar or spinal gray matter. Spasm due to irritation of the cerebral cortex or the pons is usually accompanied with a conju-

[1] Centralblatt für Chirurgie, No. 33, 1903.

gate deviation of the eyes. In ordinary torticollis the eye-muscles are not involved.

The disease occurs chiefly in adults over 30 years of age, and affects women more frequently than men. In 32 cases collected by Richardson and Walton, 2 were between 10 and 20, 6 between 20 and 30, 15 between 30 and 40, and 3 between 40 and 60; 10 were male and 22 female. Cases occurring in females below the age of 30 are often hysterical in nature.

As predisposing causes of the affection, may be mentioned neuropathic heredity (the family history will frequently reveal epilepsy or insanity). Previous attacks in the individual of facial spasm, migraine, or other nervous affections, are common. The present attack is frequently preceded by depressing emotions, general ill health, or severe shock, from injury, general or local. Malarial poisoning is considered by Osler as a factor. Unusual exertion or long-continued abnormal position of the head, as in certain affections of the eyes, have been considered as etiological factors. Alcoholism, metal-poisoning, acute infectious diseases, are frequently exciting causes. The disease consists of tonic or clonic spasms of the neck-muscles. The spasm is usually the first symptom, but it may be preceded by pain or vertigo. The onset is, as a rule, very gradual. At first the spasm may be noticed only during unusual excitement, becoming gradually more frequent and severe, requiring months to reach any great degree of severity. Rarely, it comes on acutely in a few days or weeks. The progress is usually steady, but may be intermittent. As a rule, it is unilateral, or, at least, one side is affected more severely than the other. Occasionally it is bilateral from the outset. As a rule, several muscles are affected, but when one only, it is usually the sternomastoid. Next in frequency comes the trapezius, and usually on the same side. The splenius is almost as frequently affected, but it is usually the opposite splenius. The scaleni are occasionally affected, and the platysma; more rarely, the trachelomastoid and omohyoid. The most frequent combinations of muscles involved are the sternomastoid and trapezius of the same side, or these muscles combined with the splenius and the deep rotators of the opposite side. In backward spasm, both trapezii, or both splenii and the deep muscles, are affected. In tic rotatoire the obliquus capitus inferior and splenius of the same side are involved.

Gowers says the muscles which turn the face to the left are most frequently affected. An allied condition is the spasmus nutans, nictitatis spastica, or sàlaam grusskrampfs, affecting children between dentition and puberty. It chiefly affects the deep posterior muscles, the sternomastoid and deep anterior muscles, and is bilateral. The head is jerked backward and forward, frequently also from side to side. Frequently, the face, and especially the eyes, are involved. Nystagmus is at times observed. As a rule, the spasm ceases during sleep.

The movements of the head in spasmodic torticollis vary, of course, with the muscles involved. When several muscles are affected, the movement is the result of their combined action. Careful study of the position assumed and accurate knowledge of the action of the neck-muscles are essential to a correct diagnosis. The spasm in all varieties may be either tonic or clonic, or both may occur together. Clonic spasm may become tonic as it increases in severity, or more commonly tonic spasm may become clonic.

The intensity of the spasm varies from time to time, and it may be intermittent. There is, in most cases, a tendency for the spasms to involve other muscles than the one or the group first affected. Forcible resistance of the spasm, when limited to one muscle, will frequently cause it to spread to other muscles. In some cases the spasm involves the muscles of the face of arm, especially in severe paroxysms. As a rule, there is no pain connected with the spasm, but often a feeling of discomfort or fatigue. In other cases the pain is severe and distressing. The affected muscles may become, in time, hypertrophied. The tendency of the disease is to increase gradually in intensity and range, but after a few years it may cease to progress, and remain stationary for the remainder of life. Other cases remain slight, confined to a single muscle. Less commonly, after a time, the spasms diminish in severity, and finally disappear

spontaneously or as the effect of treatment, but they may recur after a variable time.

With but few exceptions, the medical treatment of this affection has not been crowned with success. Gowers reports a case treated by morphine injections which was free from recurrence after ten years, but he still continued his morphine. Williams published a case which improved greatly under toxic doses of gelsemium after division of the nerve had failed to give relief.

Electricity has been of but little benefit, and although massage and muscle-stretching may do good in recent cases, in cases of long standing they are usually futile. Recognizing the unsatisfactory results of these methods of treatment, Kocher, in 1884, published his procedure of division of the affected muscles by several successive operations. In typical cases he divided the sternomastoid trapezius on one side and splenius and complex on the other. He reported quite favorable results in seven or eight cases operated in this manner.

Of operations upon the spinal accessory nerve, stretching ligature and division have given, at the most, but temporary relief. The only operation upon the nerve which gives hope of permanent relief is resection of a considerable portion of its substance. Since the first operation of Campbell de Morgan in 1862, numerous operations of this nature have been reported, and the results were very favorable as regards the spasm of the muscles supplied by this nerve. The work of Keen of America and of Noble Smith of England, at about the same time, in 1890–91, advanced the knowledge of the subject by directing attention to the posterior cranial nerves and the necessity and feasibility of their resection in cases involving the posterior groups of muscles. Since that time many reports have appeared of resection of both the spinal accessory and posterior branches of the upper cervical nerves, with sufficiently gratifying results to establish this operation as one of the recognized surgical procedures. Gardner and Giles of Australia (*Australian Medical Journal*, 1893) claim priority over Keen in this field, having resected these nerves a few months previously.

The sternomastoid and trapezius being the muscles most frequently affected, the nerve supplying them—the spinal accessory—has been the one most often attacked. In a number of reported cases in which other muscles have been involved with these two, the resection of the spinal accessory alone has been sufficient to relieve the spasms. In other cases this expectation has not been fulfilled, and even muscles free from spasm have later become involved, and further operation has been required for their relief. The advice of Gardner and Giles to allow a considerable period to elapse after the resection of the spinal accessory, in the hope that this alone may avail, seems to me still sound, as the resection of the nerves supplying the posterior neck-muscles is a serious and tedious operation, and not to be undertaken lightly. Still, in a considerable number of cases extensive resections have been made at one sitting with excellent results.

The muscles of the posterior group may be divided into those which retract the head, those which rotate, and those which do both (the larger number). The simple rotators are the inferior oblique and rectus capitis posticus major. These are supplied by the suboccipital nerve. Those muscles which extend only, or with very slight rotary action—the rectus capitis minor, superior oblique and complexus—are also supplied by this nerve. Those muscles which, when both sides are acting, extend, and when one side acts alone, rotate, include the splenius trachelomastoid, and complexus, and are supplied by the second and third nerves. All the powerful rotators of this group turn the face toward their own side, as opposed to the muscles supplied by the spinal accessory, which turn the face to the opposite side. Therefore, if, after resection of the spinal accessory upon the right side, the face still turns to the left, it is due to the latter group of muscles, and is to be treated by resection of the posterior branches of the three cervical nerves upon the left side. In simple tic rotatoire the resection must be upon the same side to which the face is turned. In bilateral retrocollic spasm, both sides must, of course, be resected.

In most cases with severe involvement of the posterior group of muscles, a resection of the posterior branches of the three upper cer-

vical nerves will be required. These nerves lie deeply in the neck beneath the trapezius, splenius, and complexus. The operation wound is very deep, and hemorrhage apt to be troublesome. The exposure of these nerves is therefore not easy, and failure to secure a complete result is undoubtedly due in many cases to an incomplete operation. The paralysis resulting from resection of these nerves is seldom the cause of inconvenience. Wintz resected, in one sitting, both spinal accessories and the upper three cervical nerves of both sides for retrocollic spasm. The patient could still move the head actively. But, as the spasms did not entirely cease, it is probable that the resections were not quite complete.

Resection of the spinal accessory may be made by exposing the nerve, either before its entrance into the sternomastoid, or after it leaves that muscle. The former position is preferable, as the nerve is more easily exposed and may be divided higher up. The incision is made along the anterior border of the muscle, extending from the apex of the mastoid for a distance of about three inches, and ending about two inches below the angle of the jaw.

The skin, fascia, and platysma having been divided, the anterior border of the sternomastoid is clearly defined and drawn strongly backward so as to put the nerve upon the stretch. The posterior and lower part of the parotid may have to be drawn forward if it overlaps the muscle. After drying the wound, the nerve is searched for with a director in the fatty connective tissue which lies between the muscle and the carotid sheath.

As a landmark, the angle of the jaw marks the level at which the nerve penetrates the muscle, about one inch below the tip of the mastoid. Another landmark is the transverse process of the atlas, which is quite prominent, or may be found by tracing up the posterior belly of the digastric. Between the front of this transverse process and the posterior belly of the digastric, the nerve emerges to pass backward to the sternomastoid. A small branch of the occipital artery accompanies the nerve, but gives no trouble. All dissection should be done bluntly. The nerve should be divided as high up and as much resected as possible.

Resection of the posterior divisions of the three upper cervical nerves is a much more difficult operation. They may be uncovered either by the vertical incision of Noble Smith or by the transverse incision of Keen.

Smith's incision extends from the occiput downward for about three inches, parallel with and about one inch to the side of the spinous processes. The trapezius is divided and the inner border of the splenius exposed, and partially divided if necessary. The complexus is split in the direction of its fibers, the wound margins well retracted, and the suboccipital triangle defined. The great occipital nerve is most easily discovered, and is traced from the point at which it pierces the complexus, downward and outward, across the suboccipital triangle and inferior oblique muscle to its origin from the posterior division of the second cervical. This should be divided as far out as possible, and a portion resected. The outer branch of the posterior division of the third cervical lies about one inch below the great occipital. It should be traced outward to its junction with the main trunk and resected. The suboccipital nerve or posterior division of the first cervical is the most deeply situated and most difficult to find. It lies within the suboccipital triangle, appearing from beneath the outer border of the rectus capitis posticus major, running outward across the triangle to disappear beneath the inner border of the superior oblique, and is accompanied by the vertebral artery which lies in front of it (i. e., below it). Its deep situation and the small extent of the nerve exposed make its resection very difficult. Smith was obliged to desist before reaching this nerve.

Keen's incision is transverse, about one half-inch below the lobule of the ear, beginning at the median line and extending outward for about three inches. The trapezius is divided transversely and dissected up. The great occipital nerve is found as it emerges from the complexus, usually about half an inch below the incision, to enter the trapezius. The complexus is likewise divided transversely at the level of the nerve, which is then traced down to its origin from the posterior division of the second cervical, and a piece resected. The inferior oblique being recognized, the suboc-

cipital is traced into its triangle and a portion resected. The posterior division of the third nerve is located an inch below the great occipital, beneath the complexus. It should be resected close to the main trunk. The divided muscles should be united by buried sutures, and drainage provided for.

By Keen's incision the nerves are more readily exposed, and the transverse division of the muscles is an auxiliary measure in the relief of the spasm, as shown by Kocher.

Maurice Richardson, in several of his cases in which operation upon the spinal accessory had failed to give complete relief, made a long oblique incision from the occiput nearly to the clavicle. He then divided all of the contracted muscles and resected the posterior cervical nerves. The results were very satisfactory and the functional disturbance slight.

CONCLUSIONS

Torticollis in infancy may be congenital or acquired, and is due to a chronic myositis of the neck-muscles. Open tenotomy followed by modillirende redressement is the normal procedure in advanced cases, and in severe cases, resection of the muscle. In inveterate spasmodic torticollis, resection of the spinal accessory, followed later, in some cases, by resection of the posterior cervical nerves, gives the greatest promise of relief.

REPORT OF FOUR CASES OF HYDRAMNION

By CHARLES B. REED, M. D., Chicago

Case 1. The patient, a III para, age 26, entered my service at the Cook County Hospital, July 4, 1904.

The pelvic measurements were of average size, and the urine contained no abnormal constitutents, although the specific gravity was only 1010.

She had begun to vomit seven months previously, but the thought of a pregnancy did not occur to her; for the menses, normal in time, duration, and quantity, continued present for the next three months, when they and the vomiting simultaneously ceased. An abdominal tumor, which grew rapidly, was now noticed.

Because her pains supposedly signalized the onset of labor, she was sent to the hospital.

The external examination showed a very tense tumor extending in the median line from the ensiform cartilage to the pubes. Ascites and ovarian cyst could be excluded. The tumor was tensely fluctuant, and ballottement could be obtained when the woman lay on her left side; not, however, on the opposite side. The patient was dyspnœnic and cyanotic; her pain was irregular, but persistent, and incited her to cry out when she moved. The internal examination revealed a cervix soft and easily accessible, but not in any degree effaced; the os was closed; the woman was not in labor.

A diagnosis of hydramnion was made and rupture of the membranes advised. This procedure was carried out by passing a pair of long dressing-forceps through the os. The patient was immediately relieved by the discharge of 8,000 c.c. (8 quarts) of liquor amnii. During the discharge of the fluid, her pulse rose 12 beats a minute, and directly after the discharge the fundus came down to the umbilicus.

Thirty-six hours later, labor began, and terminated in the discharge of a pair of macerated male twins, weighing respectively 1 pound 4 ounces and 1 pound 5 ounces. The placenta was single, with two cords, neither one of which had a velamentous insertion. The anastamoses between the vessels of the two cords were very numerous on the placental surface. The placenta weighed 1 pound 4 ounces. The puerperium was normal.

Case 2. Barbara F., primipara, age 36, unmarried, spoke Polish only, came into my service at Cook County Hospital, June 29, 1904.

At the time of her admission, the patient was in continual pain, groaning, and throwing herself about. The pains were said to have begun four hours before admission. No other history obtainable. Exacerbations of pain occurred every 5–6 minutes. The doctor in charge assumed that the patient was in labor, and treated her expectantly until the next morning, when tetanus uteri suggested itself to him, and I was notified.

External examination gave an abdominal tumor, quite evidently the uterus, which extended in the median line to a point four fingers above the umbilicus; tumor was hard and tense; palpation and auscultation negative.

[1] Read before Chicago Gynecological Society January meeting. See discussion in that department.

Internal examination gave a soft but uneffaced cervix; no dilation of os; uterus above cervix quite boggy.

A diagnosis of hydramnion was made, and labor induced by introducing a Goodell dilator, which opened the os, ruptured the membranes, and allowed 3,000 c.c. of liquor amnii to escape. The introduction of the finger showed that the entire cervical canal was rigid and gristly in character. The fœtus was in transverse position, and a foot was brought down. Some traction was made upon the foot, and in about an hour the patient expelled a female anencephalic fœtus weighing 1½ pounds. The spinal canal was still open. The fœtus was apparently at the seventh month of gestation. The placenta weighed 9 ounces. The recovery was uneventful.

Some of the interesting features of these cases may be briefly alluded to.

In the second case the friends quite reasonably supposed the onset of labor, but palpation, and especially the internal examination, should have told the doctor that the uterus was not contracting and that the pains were not labor pains.

On the other hand, when it was discovered in the confinement-room that the uterus was hard and tense, the condition was mistaken for tetanus uteri because the uterus was supposed to be in a state of tonic spasm.

Case 3. A primipara whom I saw in consultation with Dr. Houston. Diagnosis of hydramnion, and probably twins, was made about six weeks before labor. Before labor occurred, the patient diminished greatly in size, and when membranes ruptured, not more than 3000–4000 c.c. of liquor amnii was discharged. One living and one dead and macerated child, of different sexes, were delivered.

Case 4. Referred to my service in Cook County Hospital, through the courtesy of Chicago Lying-in Hospital (out department). Patient was III para, at term, and enormous in size. Enlargement had begun suddenly three weeks previously, and legs and thighs were greatly distended with serous exudate, although not really œdematous; heart, lungs, and urine were normal; no dilation of os, although woman had pains that simulated labor pains in frequency and regularity, which had begun two days before.

A diagnosis of hydramnion and probable twin pregnancy was made, and the interne, Dr. Herbison, was advised to puncture the membranes. This he did, and was almost deluged by the great flow of fluid. A second membrane also required puncture, and in time twins, in two sacs — a boy and a girl — with two placentas, were delivered. One head and one breech presented. Liquor amnii, unfortunately, was not measured, owing to improper preparation for so large a quantity of fluid. It is not inappropriate to refer to some of the interesting features in connection with these cases.

The diagnosis of tetanus uteri usually depends upon the presence of an obstruction to the course of labor, and case II was not in labor, and there was no obstruction to labor when inaugurated.

The general symptoms of a tetanus uteri, such as the constitutional reaction, the rise of pulse and temperature, were absent, nor, indeed, were any of the significant local phenomena present, such as the tonic uterine contraction, the uterine tenderness, the strangury, rectal tenderness, neuralgias of the lower limbs, and the face indicative of anxiety.

The history, too, of a prolonged second stage was absent, while the fluctuation of the tumor showed that the liquor amnii was still present.

In making ballottement in the first case, there was an interval of three seconds between the impulse of the fingers and the return of the fœtus. Such an interval may well suggest a long fœtal journey.

This case, again, was particularly interesting, because it presented an instance of hydramnion in association with unioval or homologous twins, to which Wilson first called our attention.

Twin pregnancies occur about once in 90 labors, and unioval twins only once in 630 labors.

The twins from one ovum are always of the same sex, possess a single placenta and chorion, but have separate amnions and two cords, the vessels of which ramify and anastomose freely on the fœtal surface of the placenta.

It is in this condition, and this only, that acardiac monsters are found, the condition being explained as a process of gradual absorption by one unit of the total nourishment. This is accomplished by the stronger of the twins obtaining at first an excess of the nutrition, then diverting the blood-stream, and finally cre-

ating in the second fœtus a positive accessory influence.

The papyraceous fœtus, for the same reason, is also relatively more common in these pregnancies. Schatz, in 1882, reported an exquisite case of homologous twins, one of which showed oligohydramnion and the other polyhydramnion, and Strassmann has lately contributed another case of the same kind.

In 123 cases of hydramnion collected by Mangiagalli, 52 were twin pregnancies. In 101 cases collected by Wilson, 51 were single pregnancies, 46 twin, and 4 triple pregnancies, and it was quite remarkable that of the 46 twin cases 22 were unioval twins.

Considering the disproportionate frequency of multiple to single fœtuses, the figures are striking.

Thus hydramnion is more frequent in twins, and in unioval twins especially.

The disease presents other points of similarity with multiple pregnancy, in that the frequency increases with the age and the pregnancy, and to a much greater degree than in twin pregnancy is hydramnion disastrous to the child.

Another condition common to both is in the pronounced tendency to post-partum hemorrhage which the unusual distention creates.

The history of acute hydramnion is usually uneventful until the fourth or fifth month, and then without an assignable cause there is a sudden rapid enlargement of the uterus, with resultant pressure symptoms and distress. This may become chronic in a few weeks. Premature delivery will occur, usually before the seventh month. Labor is generally spontaneous, although twenty per cent are said to be induced.

The amount of liquor amnii in my first case was quite large, being seven or eight times the normal quantity, but much larger amounts have been reported. Thus Schneider reports 30 liters; Wilson, 28 liters; Schatz and Küshner, each, 15 liters; Werth, 15 to 20 liters; McClintock, 9 liters.

The prognosis of these cases should be favorable for the mother, if recognized early and watched carefully.

In McClintock's 33 cases, 4 mothers died from rupture of uterus — 2 by exhaustion and 1 from infection.

The conditions for fœtal survival are very unfavorable. Many die from the fluid pressure, some from the various conditions found in association with hydramnion to which some ætiological importance is attached, and some are sacrificed by the premature delivery.

The conditions result, also, in a very large proportion of monstrosities and organic deformities.

It is generally reported that about twenty-five per cent of the children perish. In the McClintock series, 9 were still-born, and 10 died inside the first few hours. Of Wilson's 34 fœtuses, only 1 lived and thrived.

In this report, which is preliminary in character, I have sedulously avoided any discussion of the ætiology, as the subject is one in which theories have run rampant for many years, and discussion will be fruitless until something more definite is known concerning the sources of the liquor amnii.

THE TREATMENT OF UTERINE RETRODISPLACEMENTS[1]

By EGBERT H. GRANDIN, M.D.
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BY logical sequence, the treatment of uterine displacements has resolved itself practically into a surgical one. Our forefathers and masters rarely opened the abdomen *intra vitam*, and therefore were not familiar, from actual observance, with the altered anatomical conditions associated with displacements. Furthermore, the pathology of their day was similarly at fault, and led to a therapeusis which was nugatory, futile, even though, often, palliative. In uncomplicated displacements, great stress was laid on the factor of version, and in complicated displacements the ætiological factor was termed cellulitis. Therefore the justification for pessary, tampon, posture, massage. It was my fortune to start life under such teaching, and therefore I speak about such measures from the standpoint of a fair amount of practical experience. In those days I owned hundreds of pessaries of various shapes, and bearing many an honored name, and, for a time, with due gravity, I taught the general practitioner how to introduce them *lege artis*. Whilst I palliated the symptoms accompanying the uncomplicated displacement, I do not think I ever cured the woman so as to enable her to dispense with the pessary, her doom being to wear it until kind Nature brought about the physiological change in weight at the menopause. Similarly, when facing the complicated displacement, I tamponed and I columned the vagina, and I ordered douches and posture, that the cellulitis might be caused to disappear. To my credit, I claim that massage never appealed to me, any more than it would now, when, with the knowledge of the pathological process complicating the displacement, its absurdity is apparent to every one, except to him who has never looked into the abdomen under the given condition. Thus I saw the cellulitic deposit disappear, except where it broke down into pus, and thus I often saw the uterus become more mobile, in ignorance, however, of the fact that this mobility was accompanied by similar mobility of the structures to which it was attached. And then came the pessary again, if the woman could tolerate it — to be worn *ad infinitum*. To sum up the matter, the methods I am speaking of palliated often, but rarely cured.

With the development of abdominal surgery came the new pathology and the modern treatment, which, as I stated in my opening remarks, is surgical when cure is aimed at, and not mere palliation. Under the new *régime* we learned that the mere fact of version did not cause symptom, but that another factor — downward sagging — was the essential element. Under the new *régime* we found that it was not cellulitis, but peritonitis, which was the complication. Thus, of necessity, all but those who will not see recognize the futility of pessary, of tampon, etc.

Supposing a woman comes here to-night complaining of backache and of bearing down, and we examine her together, and find a movable retrodisplaced uterus. We open her abdomen, and we find the fundus of the uterus lying backward, the ligamentary bands of peritoneum relaxed, the uterus heavy, the vessels in the broad ligaments distended. We pull the uterus forward, and we note the same relaxation of the peritoneal folds. Therefore mere correction of version is not going to help us as regards cure. That which is requisite is elevation of the uterus, in order that the organ may assume a fairly normal position.

Supposing another woman comes here to-night, and on examination we find a retrodisplaced uterus adherent, with, possibly, tension or fullness to one side or another, or on both sides. We open her abdomen, and the uterus lies backward, the peritoneal folds are thickened, perhaps the tubes and ovaries are buried in peritoneal bands. In order to bring this uterus forward, these bands or adhesions must be separated or broken, and again the organ

[1]Remarks in opening a discussion before the section on obstetrics and gynecology of the New York Academy of Medicine, February 20, 1906.

must be lifted upward, in order that it may approximate a fairly normal position.

That which we shall have learned from these two operations is this, that to cure a case of retrodisplacement an operation is called for which shall lift the organ to a higher level and maintain it there, as also that the symptoms in complicated displacement are accentuated by the peritonitis and often by concomitant disease of the adnexa.

Now, what resources does surgery offer us? In the first place, let us consider movable, uncomplicated, uterine displacement. Here the woman should ever be given her choice between palliation and cure. Should she elect the pessary with all its annoyances, it is her right, since any operative measure carries risk. All that we are justified in doing is to give due attention to such complications as endometritis, or laceration of the cervix or the pelvic floor, and having inserted the pessary, to warn her of the necessity of reporting at intervals, in order that the instrument may be removed for cleansing purposes, or possibly for alteration in shape or in size. If she elect operation, we are facing an *embarras de richesse*, unless we bear in mind the factor at the bottom of the symptoms. We must rule out at once any procedure which results in fixation of the uterus, for it does not advantage the subject in the least to substitute one pathological position for another. I would state here, that fixation is justifiable only in women with prolapse after the child-bearing period. There remain, therefore, three methods of approach: through the inguinal canals, through the vaginal vault, through the abdomen. The inguinal canal route I long ago rejected, because it subjects the woman to the risk of double inguinal hernia, as the curious may find out by investigation of the records of such institutions as the Ruptured and Crippled Hospital, and, again, because, according to my light, while such operation may draw the uterus forward, it does not lift it upwards — a *sine qua non*. Further still, I have seen a number of instances where operation through the inguinal route has resulted in the uterus being placed so closely against the pubes that the bladder could not fill upwards, bladder symptoms being substituted for back and for bearing-down symptoms. Fixation by dissection through the vagina never had logical ground for existence, and is only mentioned by me for renewed condemnation. Infolding or shortening of the round ligaments through the vagina I cannot accept, because it requires considerable mutilation of the vaginal vault for performance, because I do not think that thereby the uterus is lifted upward, and because the technique may be followed by fixation. There remains the abdominal route. Formerly, suspension was practised by the posterior or the anterior fundal wall, but it has been found that such procedure is apt to be a cause of dystocia in the event of pregnancy ensuing. Those who are expert may shorten the posterior ligaments of the uterus, although it appears to me that thus, whilst the uterus is maintained forward, it is not kept at a higher level. My own preference, nowadays, is suspension of the uterus by the round ligaments to the parietal peritoneum, without, however, buttonholing the fascia. This keeps the organ forward and upward, does not interfere with the normal sphere of motion, nor does it cause dystocia at the ensuing labor. I much prefer this to infolding of the round ligaments, each on itself or the one on the other, because such methods distort the broad ligaments, as any one may prove to his satisfaction in the operating-room.

To pass now to complicated uterine displacement. Here the problem is complex, since not alone are we dealing with backward displacement, but also with peritoneal bands binding the uterus backward and downward. Nor is this all. Rarely is it that tubal or ovarian disease does not enter as a factor, and frequently the intestines or the omentum or the appendix are adherent to uterus or to broad ligaments, and, most significant of all, the best expert, in a given case, cannot tell the extent or the nature of the complication. No man who has operated much needs to be reminded of the surprising things he meets with where least suspected. Remembrance of this should teach the impressive lesson that the abdominal route should be that of election in the instances under consideration. To glance for a moment at other routes: It should be scarcely conceivable that any man with surgical instinct could advocate the inguinal route for operation in case

of adherent retroflexion, yet there are a few men who do, in ignorance of the fact that surgical thinkers can only term such method a monstrosity. Think of it: dig a large hole in each inguinal region in order to drag up the adherent uterus with, likely enough, adherent tubes and ovaries containing possibly pus, when through one hole in the midline that which is requisite may be done deliberately and under the guidance of the eye. The vaginal route, under the given conditions, may be looked at with more kindly spirit, although it does not appeal to me. I grant that a large enough hole may be made in the vaginal vault to dislodge the adherent uterus and bring it forward together with the tubes and the ovaries for the purpose of performing on them such reparative work as may be demanded, but, even so, the vaginal vault is mutilated, the uterus is not lifted upward, and fixation may ensue. Finally, the hand which brings this uterus forward cannot tell the damage it has inflicted or that which it has left behind which should not have been, and therefore this route does not appear surgical to me. To bring the matter home, let me relate two instances of rather recent date, which occur to me out of many. A woman presented herself with an adherent retroflexion and thickening in the left fornix of the vagina. On abdominal section, the sigmoid was found adherent to the left broad ligament, and on loosening it, a perforation was found connecting with the shriveled tube. Left salpingo-oöphorectomy was performed, three inches of the gut was resected, and the uterus was suspended. Take another case of retroflexed uterus. On opening the abdomen, the cæcum and the appendix were found adherent to the fundus to the right, the tip of the appendix being ulcerated. The appendix was removed and the uterus suspended by the parietal peritoneum method. In either of these cases, operation by the vaginal route would infallibly have resulted in the complicating factors being overlooked, and, pray, how would it have advantaged the woman! In any series of a hundred sections such complications may occur at least once. From above, the operator may determine them. My conclusion, then, is, that adherent retrodisplacement calls for operation through the abdomen, in order that, where complicating factors exist, they may be met surgically, preparatory to suspending the uterus by the parietal peritoneum, which, whilst not an ideal method at best, at the present fulfills the indications. The method is surgical, the method is logical, and, with modifications, appeals to the vast proportion of the operators in this country.

One word as to my reasons for utilizing the round ligaments for suspension. These ligaments I look upon as guy-ropes, their purpose being to limit the sphere of motion of the uterus, preventing undue excursion under normal conditions. The broad ligaments, on the other hand, owing to the elasticity of their constituents, prevent downward sagging of the organ.

Now, under pathological conditions the guy-ropes, of necessity, stretch, as also the constituent parts of the broad ligaments, as witness the loss of tone in the vessels and cellular tissue leading to the formation of varicosities. Now, a *restituo ad integrum* is never possible. All that man can do is to take in the slack of the stretched round ligaments and at the same time lift the broad ligaments upward. This is accomplished, and can only be accomplished, by means of the operative measure I have laid stress upon — round ligament suspension. Thus the operation is justified anatomically as well as clinically.

AN OPERATION FOR THE CURE OF CHRONIC DILATATION OF THE STOMACH, WITH A REPORT OF A CASE

By H. J. DONALDSON, M. D., Williamsport, Pennsylvania

BEFORE reporting this case, I have searched the literature to which I have access, and find, thus far, the most attention given the subject is an article by Keene and Tinker, written in 1903 or 1904, published in Sajous's *Cyclopædia of Medicine*, in which they say: "Thus far, seventeen operations, with one death, have been reported. In the sixteen the results were excellent." Gastroplication, as the operation is termed, consists in folding in the anterior wall of a dilated stomach, bringing the greater curvature into a normal relation with the lesser one. The circulation of the stomach is so arranged that the folding in process does not produce any strangulation of tissue, and as even the dilated stomach has thick walls, suturing is both easy and safe. What becomes of the infolded portions we can only guess, as, fortunately, we have had no occasion to hold a post-mortem.

It is, however, easy to understand, with such an abundant arterial supply, how it would be nourished, and, with the formation of adhesions, simply produce a thick, unyielding anterior wall. In my case, this dilatation seemed to affect the anterior wall almost entirely, and after the application of the suturing it was not necessary to shorten the posterior wall. It has been said that this operation is applicable to only a few selected cases, but that, I believe, will not be found true. Of course, in cancer of the pylorus, or pyloric obstruction from adhesions following ulcer of the stomach, it would do no good, but, I believe, upon investigation, many more cases of chronic dilatation with a benign thickening of the pylorus will recover, or will be relieved by this method, and thereby preserve to the individual the gastric function, which is more or less lost in gastro-intestinal anastomosis; besides, when the organ resumes its natural drain, the thicker pylorus will be less of an obstruction, for there is no doubt in my mind that the constant tension put upon the pylorus by the weight of a dilated lower wall full of fluid adds much towards contracting the pylorus, as well as putting it in constant spasm. Relieve this spasm and tension by *lessening* the capacity of the stomach, thereby lessening its weight, put it into position for favorable drainage, and you will have little or no pyloric obstruction. There is no organ that will assume the functions of the stomach, and when we throw the food directly into the intestines, as in gastro-intestinal anastomosis, we cannot help but have a chain of dyspeptic symptoms follow; and while the results to the operator are all that can be desired as far as operative success is concerned, little or nothing is said of the post-operative digestive condition.

All physicians who have attended the infant and watched him develop know only too well how many of our babies grow up with a chronic enlargement of the stomach, due to overfeeding from the bottle, and these same patients, as adults, come to our offices complaining of indigestion and constipation of an aggravated type, and examination shows only too clearly an enlarged and insufficiently drained stomach. We relieve their symptoms by medicinal treatment when they are young, but by middle life the soil is fertile, and if they have been fortunate enough to escape an ulcer, how often they develop a cancer is well known; therefore it seems to me that a great field is ready for the operative work in the adult before the era of cancer is reached.

My case was twenty-seven years old, and had been a bottle-fed baby. I have under observation several more, and as time has elapsed to warrant sufficiently the success of the operation, I shall advise them accordingly.

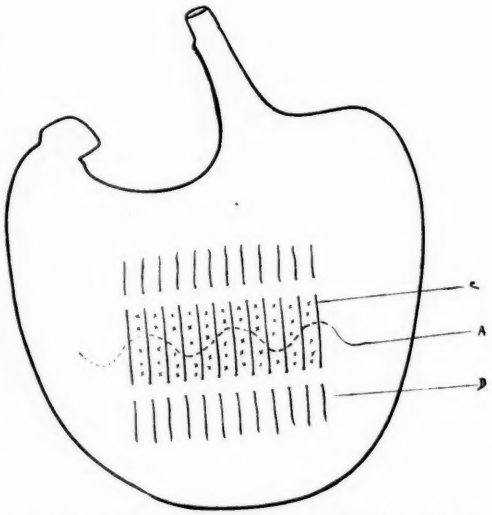
The operation I have made is, I find, recently described in *Bickham's Operative Surgery* as Weir's modification of Bircher's operation. Bircher made no effort to eliminate the dead space in the folds; Weir did, by more than one row of sutures, but Weir made no effort to get adhesions, except the opposing of one serous surface to another, and if one suture was defective, he would lose this and leave a gaping

area, which with the weight of food at that point would stretch the other sutures. In my case the surfaces were brought together with Lembert sutures, the opposing surfaces scarified, sutures tied and reinforced by a continuous gut suture, and lastly, in the bottom of the first fold which forms the largest dead space, a continuous gut suture was introduced, bringing the surfaces together and making a submucous stitch after the first row was tied. This method, while a little elaborate, forever insures a good approximation, and therefore a good result.

Operation was made in June, 1904, at my private hospital, Williamsport, Pennsylvania. Median abdominal incision between xiphoid appendix and umbilicus, showing in lower portion of wound the lesser curvature of the stomach. The organ was worked up from its resting-place upon the uterus and bladder, delivered through the wound, and found to be about twice the size of a normal stomach; its weight had undoubtedly caused the ptosis. The plication operation was then begun by introducing twelve silk Lembert sutures about one half-inch apart, near inferior border of the cardiac end of the stomach, the needle buried for one half-inch, then skipping two inches, again buried one half-inch, and emerging, the ends were clamped. The catgut suture was introduced continuously, commencing at the cardiac end about one inch from first silk suture, as shown in plate No. 1. After carefully scarifying the surface in the fold, the ends of the gut suture were pulled tight and help by forceps; then the Lembert sutures were tied and reinforced by a continuous catgut suture, which extended to the beginning and ending of our first catgut buried suture, and the ends tied.

The second row (plate No. 2) of Lembert silk sutures was introduced in the same manner, covering, this time, two inches of stomach-wall, and after scarifying and tying they were reinforced by fine silk sutures, placed about one half-inch apart, and hiding entirely all infolded portions.

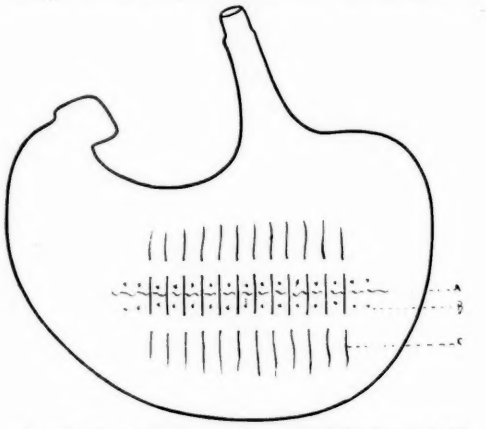
It will be seen that by my first row of sutures I infolded three inches of stomach-wall, and by my second row two inches, making five inches of stomach-wall infolded, bringing the two curvatures within about four inches of each other, which would in any case, except extreme



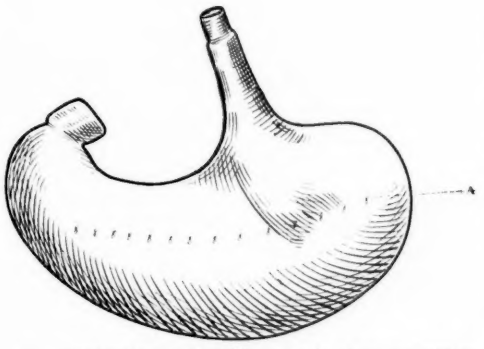
A. Catgut suture introduced in depth of first fold to obliterate dead space.
B. Lembert silk suture in situ-when tied will hold in 3 inches of wall.
C. Scarifications.

ptosis, insure excellent drainage and remove all tension and spasm from the pylorus.

This operation was made upon Mrs. W. R., June 20, 1904, and after nearly two years' freedom from any gastric symptoms, I find, after several stomach washings, it to be apparently normal in capacity. At the time of the opera-



A. Showing continuous gut suture reinforcing and hiding first row of Lembert suture.
B. Scarification.
C. Second tier of Lembert suture.



A. Showing interrupled silk suture in place, completing operation by reinforcing second tier of Lembert silk sutures and burying all sutures.

tion she was very thin, almost emaciated, from malabsorption, due to the inability of the stomach to expel the contents. She gained steadily from the day of the operation, until she took on over forty pounds, increasing from ninety to one hundred and thirty-five pounds, which weight she still maintains. It is safe, therefore, I think, to report the results as being all any surgeon could wish for.

The surgeons who recommend gastroenterotomies in all these cases can claim only one advantage; viz., time. That I grant. This operation lasted one hour. Some time was consumed in carefully testing each suture as it was placed, and in attempting accuracy in judging the correct distance from suture to suture, as my operation was done without the aid of a sound to assist the infolding process. However, I gained more than the consideration of time, because I eliminated: 1. Danger of gastroenterostomy: 2. Danger of vicious circle; 3. Danger of regurgitation of bile; 4. Danger of strangulation of the loop; 5. Danger of chronic diarrhœa and indigestion, which sometimes follows gastroenterotomies; and I preserved to the individual practically a normal stomach.

In conclusion, I wish to emphasize the following points, regarding which the success of the operation depends, and which served to show whatever little originality, if any, there is in connection with this operation.

1. The catgut suture, obliterating the large fold and dead space and pulling up the fold, flattens it out against the surface of the stomach, preventing it from hanging down into the cavity of the stomach, making, by its firmer and broader contact with the opposing serous surfaces, that giving increased nutrition, less danger of ulcer formation.

2. By two rows of Lembert sutures, reinforced by continuous suture, there is absolutely no danger of any gaping of the wound, even if one or more sutures prove defective.

3. The careful scarification between the sutures insures excellent and immediate union.

4. The multiplicity of sutures gives so much strength and firmness, that fluids can be commenced in twelve hours after the operation, without fear of injuring the wound.

THE EARLY OPERATIVE TREATMENT OF OSTEOMYELITIS IN THE FEMORAL HEAD AND NECK (HIP-JOINT DISEASE)

By THOMAS W. HUNTINGTON, M D., San Francisco, California

THE object of this paper is to establish a value for early radical treatment of hip-joint disease in accordance with a plan which I have pursued with encouraging results in three cases. At the outset I wish to include under the term "hip-joint disease," not only cases of tubercular but also those of acute infectious origin. In support of this idea I quote from a paper by Robert W. Lovett, read before the American Orthopedic Association in 1893, as follows: "Allow me once more to name these types of disease: 1. Destructive hip-disease due to a florid tuberculosis of bone or to an acute infectious osteomyelitis." Describing this variety, Lovett says: "The type of hip-disease which I would place in this class occurs most often in children of tubercular inheritance and poor vitality. The onset is rapid and painful, often excessively painful. . . . The general condition is rapidly impaired and abscess formation takes place early." That such cases are usually tubercular in origin seems probable; that they occasionally depend upon ordinary pathogenic infection, is undoubtedly true."

My interest in the general subject of hip-joint disease was aroused by frequent observation of patients suffering from this ailment in various stages of progress, and whose condition was far from satisfactory. A few of these patients came under my own care, but by far the larger number were for varying periods under the jurisdiction of colleagues, some of whom possessed wide experience and acknowledged skill. It will be conceded that the time element in the treatment of hip-joint disease by accepted and so-called conservative methods is indefinite and protracted, extending over periods varying from two to ten or twelve years. Recrudescence in cases which have gone on to an apparent cure is not an unusual experience, and during the protracted progress of the disease, widespread dissemination, with its train of consequences, is one of the developments which is always a potential.

The death-rate in European clinics and hospitals is very high, and varies, in different series and according to different observers, from fourteen to forty-eight or even fifty-eight per cent. This is in sharp contrast to the results obtained in American clinics. In public and charity patients, according to Royal Whitman, the death-rate is estimated at from ten to fifteen per cent; but under the more favorable hygienic conditions which prevail among patients seen in private practice, the death-rate is probably not more than one to five per cent. These statements seem to be fairly conservative, and are doubtless capable of verification.

Aside from the death-rate, attention is invited to the following facts, which are clearly established in the history of a large majority of all hip-joint subjects: 1. Patients are subject for long periods to confinement in bed, or to the wearing of braces, splints, or other devices. By these measures the activities of the individual are inhibited, nutrition is seriously interfered with, and normal development checked. 2. In from thirty to forty per cent of these cases, bone abscesses or intracapsular articular abscesses develop, attended by an endless list of distressing consequences, which need not be detailed in this connection. 3. Crippling deformity occurs in varying degree in a large percentage of cases, the patient being doomed to carry with him to his grave manifest evidences of his misfortune.

These and many other collateral considerations led me to seek for a revision of methods whereby the death-rate may be lowered, the consequential deformities modified or prevented, the nutritional requirements of the patient fulfilled, and the dangers of dissemination obviated.

From an article upon the early operative treatment of hip-joint disease, published by me in the *American Journal of the Medical Sciences* for July, 1905, I choose to quote the following statement: "Our present knowledge of the pathology of hip-joint disease points definitely

to a primary osseous focus in about 95 per cent of all cases. The evidence gathered from a few autopsies in the early stages of hip-joint disease, where the original focus seems to have been in the synovial cavity, is by no means conclusive upon this point. Gibney calls attention to the fact that in all of these cases the patient had been carefully treated prior to death, thus minimizing the manifestation of the original bone lesion, if such lesion existed. The seat of the osseous focus occurs usually in the head or neck of the femur. Now and then it occurs in the pelvis, at or near the acetabulum. But in the greater number of cases where the os innominatum becomes involved, the lesion is secondary to a focus in the head of the femur. The determination of the exact location of the focus is not always possible, especially after a considerable time has elapsed, but with the aid of the X-ray something may be accomplished in this direction. It is to be hoped that with the perfection of X-ray technique we shall occupy a better point of view, so far as early diagnosis is concerned."

In this connection, the anatomy of the head of the femur in a child or early adult life is a matter of extreme interest. It is to be noted that in the normal femur of a child up to the age of 18, the cortical substance of the bone extends from the shaft up to the base of the great trochanter and around the bone, rising a little on the under surface of the neck very closely to the epiphyseal cartilage. The covering of the great trochanter, most of the neck, and the entire head is a thin layer of cartilage, beneath which lies the medullary portion of the head and neck. Hence it is clear that encroachment upon the synovial cavity along the line of least resistance through this thin layer of cartilage is the thing to be expected, if sufficient time is permitted to elapse for this to occur. It is also obvious that the capsule, with its wide expanse of synovial surface, once infected by the discharge of pus from the original focus through a communicating sinus, the possibility of radical cure, by any method, without serious consequences is absolutely precluded. In my previous article referring to this particular subject, I said: "If an attempt at relief can be instituted, through a channel which will *avoid interference with the joint capsule, afford relief of tension, and admit of more or less complete removal of injected tissue*, such a procedure would seem to be based upon sound surgical doctrine. This would mean operative interference at a time when rest, traction, and fixation are the acknowledged reliance of the orthopædist." In pursuance of this idea, I planned an operation which may be described as follows, and again I quote from previous report:

"A trephine opening about one half-inch in diameter is made on the outer aspect of the thigh, at the lower border of the great trochanter. Through this opening, with a small bone curette the neck of the femur is tunneled to a depth of from two to two and a half inches. At this depth the epiphyseal cartilage connecting the head and neck will be encountered. If there be any evidence of the focal lesion external to the epiphyseal cartilage, further efforts may be suspended. It is extremely desirable not to interfere with this cartilage, if possible to avoid it, for the reason that such interference will materially affect future development." If it be necessary to enter the head of the bone either at the time of the initial undertaking, or, as I have done in one instance, at a later period, this should be accomplished by a small instrument, thereby establishing a channel of communication between the head and neck, through which, as a line of least resistance, a liquefied focus may find exit. (See Fig.)

Prior to the time that I operated upon my first case, I was entirely ignorant of the fact that others had made efforts in the same direction. Immediately my attention was called by Dr. Harry M. Sherman to the work of Macnamara of Dublin, a reference to which is to be found in Poore's article on diseases of the major articulations, in the third volume of *Keating's Cyclopedia of the Diseases of Children*, page 1196. I must have read the short paragraph therein contained very carelessly, for it left me in the belief that Macnamara's operation consisted in drilling through the neck and head of the femur for the purpose of draining an intra-articular abscess. Very recently I find that Macnamara pursued almost identically the course above outlined, and it is

only proper that I should quote Poore's reference at this time, which is as follows:

"In the early stage of osteitis, Macnamara advises exposing the bone over the great trochanter" (*over* should probably read *below*), "and with a large drill or small trephine make a free opening through the trochanter into the neck, and, as he believes, into the head, of the femur. In one case a small quantity of pus was at once evacuated. A splint was adjusted; the wound healed within a fortnight. Two months later the joint was practically ankylosed, but otherwise the child had good use of the limb. Six years later, the limb was perfectly sound, the patient healthy, and able to stand upon his feet all day. According to Poore, Wright, in volume I of the *Lancet* for 1889, page 322, mentioned having tried this operation in a few cases with good results.

American orthopædists seem to have placed a low estimate upon this procedure, and are slow to recognize it as an accredited or even rational plan of treatment in manifestly tubercular cases. My own belief is, that a tuberculous or osteomyelitic focus in the head of the femur, either on the proximal or distal side of the epiphyseal cartilage may be reached, removed, or drained by an attack through the subtrochanteric route. The success of the undertaking, clearly, must depend upon early attack during that period when the patient complains of knee-joint pain, flattening of the buttock, obliteration of the ileogluteal fold, moderate limitation of motion, night-cries, and muscular spasm. In a word, this step must be taken at the earliest possible moment after a positive diagnosis has been established. I am under a profound conviction that during this period, a focus, whether tubercular or otherwise, can be attacked and drained with prompt wound-healing. In support of this doctrine, I now have three cases, each of which strengthens my position.

It is true that in none of them have I succeeded in demonstrating the presence of the tubercle bacillus. In the first case, the patient, at the time of operation, presented a limited tubercular focus in one pulmonary apex. This fact was inadvertently omitted in my first published report, but is, nevertheless, a matter of record. The second and third cases were, to my mind, clearly tubercular, from the clinical standpoint, although I am well aware that this position will be attacked by those who are not in accord with

the belief upon which this procedure is based. The two first cases are reported in full in the *American Journal of Medical Sciences* for July, 1905. The present condition of both patients is eminently satisfactory, there being at the present time no evidences of recrudescence. The third case is as follows:

CASE 3. Elizabeth C., age 14. Has been an inmate of the Los Angeles Orphan Asylum for seven years. I saw her at the Sisters' Hospital, Los Angeles, May 7, 1905, and obtained the following history:

Family History. Father living and well. Mother died five years ago, of nephritis, at 32 years of age. There are two brothers and four sisters, all well.

Past History. Had scarlet fever three years ago, making a good recovery; two and a half years ago was successfully treated for clubfoot.

Present History. Early in February of the present year, she fell from a seat, striking on her left hip. Complained of some pain following this incident, but symptoms were not important. About March 1st the left leg became lame. She limped in walking, and complained of knee pain. These symptoms became more and more marked, and for this reason she was admitted to the Sisters' Hospital in Los Angeles on April 14, 1905. From that time on a careful record of her temperature was kept. Much of the time the temperature was normal, but there was usually a slight rise in the evening, the thermometer occasionally registering 100°. There was a tendency to flexure of the thigh and marked limitation of all motions.

I saw her at the Sisters' Hospital, May 7, 1905, and verified the foregoing observations. The patient seemed to be a fairly well nourished child, but extremely anæmic. On examination, there was an apparent shortening of the affected limb, but this was not definitely made out, and undoubtedly was misleading, as comparative measurements could not be made with any degree of accuracy, owing to partial flexure of the limb. During the past few weeks, traction had been applied by Dr. Bryant, but this did not overcome the muscular pain and spasm. There was extreme sensitiveness on pressure over the great trochanter, and the patient sharply resented movement of the limb. Flattening of the buttock and obliteration of the ileogluteal fold were unmistakable.

Operation was suggested and carried out as in in previous cases. (See illustration showing plan of operation and possible location of foci in head and neck of the bone.) Through a trephine opening below the great trochanter the neck of the bone was tunneled with a large bone curette for a distance of two and an eighth inches, at which point the material removed showed chippings from the epiphyseal cartilage, and further excavation was suspended. The material removed was of a dark-red color, very hyperæmic, and the wound bled freely. The cavity was carefully packed, and the external wound closed, except at the point of exit for the drain. A full plaster-of-Paris dressing was applied from the waist down. The material removed was placed in the hands of Dr. Black of Los Angeles, who was kind enough to carry out full laboratory investigation, which will be alluded to later. Nothing in the bone scrapings indicated that a definite focus was encountered at this time. The subsequent history of the case was of extreme interest. For the first three days the patient complained considerably of pain, and the temperature ranged from 99° to 100½°. On the fourth day, when the dressing was removed, pus was encountered upon the gauze. A purulent discharge continued for about two weeks. For a short time afterwards there was a serous discharge, but at the end of one month the wound had permanently healed. Plaster-of-Paris dressing was continued for ten or twelve weeks, when it was omitted, and the patient allowed freedom of movement. She walked upon crutches, and was altogether comfortable. She continued the use of crutches until about six weeks ago, since which time she has walked without any support whatever.

Laboratory report of Dr. Black:

Material from the bone scrapings was carefully examined, with negative result. Guinea-pigs inoculated with material from the wound recovered permanently. Although I requested that further investigation be made along this line, I regret very much that the purulent discharge from the wound which began on the fourth day after operation was never subjected to investigation, hence the exact character of the pus was not determined, and remains a matter of speculation.

I saw the child the second time on November 27th, nearly seven months after operation. Found her looking markedly improved, weight 92 pounds. She was well nourished, free from pain, walked without a limp; there was entire absence of sensitiveness over the great trochanter, and no pain was elicited by percussion over the plantar surface of the foot. Both limbs were measured carefully, Dr. Dillon

of Los Angeles assisting in this undertaking.

The following are the measurements:

	Right	Left
From the anterior supraspinales to internal malleolus	31 in.	31⅛ in.
Circumference of thigh at junction of middle and upper thirds	17¼ in.	17 in.
Circumference at middle of right calf	11 in.	11 in.

The ileogluteal folds on both sides were equally marked, and the flattening of the buttock on the left side had entirely disappeared. Movements of the affected limb were perfect, with one exception: abduction of the affected limb with the thigh in full flexion upon the abdomen was restricted in slight degree. Abduction of the affected limb in full extension was normal. Flexion of the affected thigh seemed rather exaggerated than otherwise, and absolutely painless.

ARTERIAL ANASTOMOSIS BY INVAGINATION

By E. J. BROUGHAM, M. D., Chicago
Surgeon Passavant Hospital

THE suturing of arteries and veins after injury is at present an established surgical procedure; but the restoration of continuity of divided arteries by the method of invaginating the ends has had but few trials upon man.

Dr. J. B. Murphy reported, in 1897 (1), a successful case upon the common femoral, and since this report I have found but three cases in the literature.

Djeinil Pacha (2), a Russian, at the congress at Moscow, 1897, stated that he had had two cases of the axillary artery repaired by Murphy's invagination method.

Kümmell (3), in 1900, resected 4–5 cm. of the femoral artery because of its involvement in a cancerous growth, and invaginated the ends. In this case the operating wound was not immediately closed, but was tamponed with gauze. The patient made a good recovery. Pulsation was felt in the popliteal in a very short time.

Dr. J. B. Murphy, to whom we are indebted for the method, demonstrated its possibilities after numerous animal experimentations. The necessity for the operation comes into consideration when it is impossible to do arteriorrhaphy, and the vessel, by its size, is of importance when its sudden obliteration might cause gangrene in the distal parts of an extremity.

In an injury to the artery embracing over one half its circumference, Dr. Murphy found it better to invaginate, and not to suture.

When we also have the accompanying veins destroyed, the danger is much greater to the distal parts, as the veins play an important part in establishing the collateral circulation.

The loss of more than three quarters of an inch of the vessel, Dr. Murphy believes, precludes the repair by this method, except possibly where position of the limb would relieve tension; as, Scarpa's triangle, popliteal space, or the axillary space.

Aneurisms or dilatations at the site of invagination have not been observed in any of the experiments, either by Drs. Murphy or Dörfler (4).

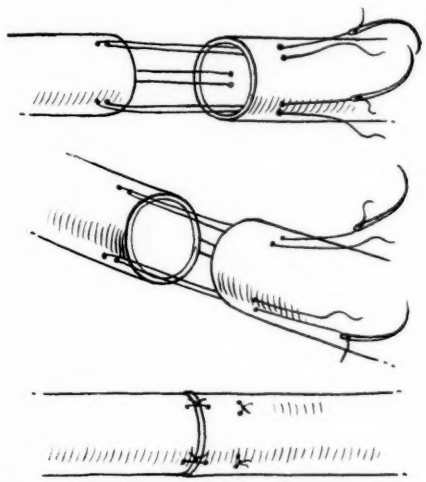
This danger is minimized by the fact of doubling the wall, bringing the resistance to the arterial pressure, which seldom taxes fully the strength of the wall above normal.

The caliber of the lumen as shown in the experiments is always narrowed and frequently destroyed by endarteritis obliterans.

The narrowing or occlusion which occurs in endarteritis is slow, permitting time for the establishment of collateral circulation, which is the important end desired.

When infection of the vessel occurs, failure is certain from septic endarteritis and thrombosis.

The non-penetration of the intima by suture



Figs. 1 and 2. Sutures placed not drawn up.
Fig. 3. Sutures drawn and tied; invagination complete. Sutures in overlapping edge tied.

in invagination seems to be of more importance than it is in arteriorrhaphy; whereas in the suturing of arteries, Dr. Murphy, following Dr. Alex Jassinowsky, advises the adventitia and media only to be included. Dr. Dörfler (4), on the other hand, found no ill results in his experiments from including the intima penetrating all coats. His microscopical examinations showed no endarteritis nor obliterating thrombosis, with the exception of two cases caused by faulty technique. These two cases embraced one including and one excluding the intima.

But in suturing the proximal end of the invagination, Dörfler agrees with Dr. Murphy that it is important not to penetrate the intima.

Dörfler had similar results in his animal experiments to those of Dr. Murphy. Calcified arteries, or where the ends lie in pus (secondary hemorrhage), contraindicate attempts at at invagination.

In controlling circulation, Dr. Murphy advises that delicate eight-inch Billroth forceps with broad blades covered with rubber drainage-tubing be employed, or a heavy twisted silk ligature may be used.

Kümmell (3) used ordinary hæmostatic forceps covered with rubber tubing. The greatest care must be exercised, in placing the pressure, not to bruise the intima, as more or less reparative inflammation always results.

Asepsis is an absolute requirement for success, and where the sheath can be used to cover the invagination, it is well to do so, as it aids as a barrier to infection, should it occur in the wound.

The suture material should be fine twisted silk; needles, straight or small, round curved.

There is no danger from hemorrhage, as the greater the arterial pressure, the closer are the walls pressed together, and definitive union is also hastened.

The following case was operated upon at the Passavant Memorial Hospital with the assistance of Dr. O. J. Waters.

CASE. Thomas G., colored, aged 39.

Had been stabbed August 18, 1905, at eleven o'clock A. M., and was admitted to hospital within an hour.

Clinical History. The patient had been stabbed twice — one clean-cut wound four inches long in the right half of the back, at the level of the last ribs, dividing the soft parts to the pleura, but not penetrating; the other wound entered the right axillary space.

There was a large boggy mass in the axilla, in the region of the wound, which was blocked by a protruding clot. The right arm was cold and pulseless.

Diagnosis. Penetrating wound of the axillary artery.

Operation. An incision was made through wound over the course of the axillary vessels.

After removal of a large dissecting clot, the axillary artery wounded in its third portion was readily exposed. Digital pressure as a means of controlling circulation for this and subsequent suturing was made.

The axillary artery was almost severed, possibly excepting about a quarter of its circumference.

The axillary vein was found so badly cut that for almost an inch it was kept together by a mere thread of wall. Its severance was completed and the ends ligated with catgut. The artery being so nearly divided, it also was completed, and the ends were invaginated.

After freeing the ends from the sheath for about half an inch, the proximal end of the artery was invaginated into the distal end by means of three fine twist silk sutures, as follows: Using one small, curved, round needle, entering the external side of the distal part of the artery about a third of an inch above free end, penetrated all coats; next took a stitch in lower end of the proximal part parallel to its axis, including only adventitia and media; returning to the distal part, penetrated all coats from within out, close to where suture began.

Three similar sutures equidistant in the circumference of the artery were placed.

On drawing taut, the invagination was fairly easily accomplished, and the sutures tied.

Five additional sutures taken in the overlapping edge of the distal part sufficed to bind it securely to the

external surface of the proximal end. These sutures avoided the penetration of the intima of the latter.

The sheath was adjusted over the invagination, for double security. Above and below the anastomosis, a provisional ligature, loosely tied, the ends left long, was placed in case of hemorrhage. The operating wound was simply packed with iodoform gauze and the entire arm enveloped in cotton. Late in the evening the radical pulse returned.

The case was dressed on the second day, and the artery palpated in the wound below the invagination was felt pulsating.

The patient made an uninterrupted recovery.

At no time was there œdema of the arm or any evident disturbance of the circulation.

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METHODS OF SUTURE IN HERNIA OPERATIONS [1]

By M. L. HARRIS, M. D.

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NO attempt will be made even to mention all the numerous methods of suture that have been described in the radical cure of hernia during the past few years, but your attention will be briefly directed to a few points which are believed to be of special importance in this connection. Previous to Bassini's paper in 1888, the operations for the cure of inguinal hernia were not founded on sound principles nor executed with approved technique, consequently the failures were very numerous.

The application of the principles of the restoration of the obliquity of the inguinal canal and the closure by layers of the structures forming the abdominal wall at this point, as announced by Bassini, immediately brought about a marked improvement in the results of operations in this class of cases.

In fact, the modern successful operation for the cure of inguinal hernia may be said to date from the time of Bassini's paper above mentioned, and although there have been many modifications of his method suggested, the real improvements have been, indeed, very few, and the principles as laid down by him at that time are still unimpeached. While the principles still stand, there have been a few improvements in their application and in technique, the most important of which by far is the one introduced a few years ago by Dr. E. Wyllis Andrews, of this society, and called by him the imbrication method.

This consists in so overlapping or imbricating the layers composing the abdominal wall at this point as to add materially to the strength of the region, and it may be so done as either to restore the obliquity of the inguinal canal, or so as to bring the cord straight through the wall at the innermost angle, which latter method has since become known as the Girard method.

After quite an extensive use of the various methods, the writer is convinced that, as a rule, the imbrication method furnishes the strongest and best wall in these cases.

The next point for consideration is the suture material and its method of application.

Suture materials may be divided into two classes; namely, non-absorbable, such as wire, silkworm gut, silk, linen, Pagenstecher, etc., and absorbable, such as catgut, kangaroo tendon, fibrous tissue of McArthur, etc. All non-absorbable suture materials, when buried, possess the very disagreeable property of becoming extruded, or of setting up so much trouble as to necessitate their removal, at times, weeks, months, or even years, after they have been introduced, and therefore their use in this manner has been very properly abandoned.

With the use of fibers of the aponeurosis of the external oblique as suture material, after the manner of Dr. L. L. McArthur, I have had no experience. The method is certainly unique and original, and I believe is still used by its originator with satisfaction. Since a simple and absolutely reliable method of steril-

[1] Read before the Chicago Medical Society, January 17, 1906.

izing the absorbable animal suture materials has been discovered, one of the chief drawbacks to their use which formerly existed has been eliminated.

If, after being properly sterilized, they now infect the wound, it is because they have been contaminated by handling or by contact during the operation, or else because they are in communication with the surface of the skin. This latter point is of considerable importance as a causal factor in those infections commonly called stitch abscesses, and which are usually due to the carrying of the germs from the surface to the deeper parts along the suture material by reason of its hydroscopic properties.

The excellent work of Troller (*Beitrag z. Klin. Chir.*, p. 441) has shown conclusively: 1. That, with the exception of implantation infections, the infections of the deeper parts of a wound are almost always due to the same kind of organisms that inhabit the surface of the particular case. 2. The germs reach the deeper parts along the suture material. 3. There is a direct ratio between the relative frequency of such infections and the hydroscopic properties of the suture material.

The importance of these facts will be readily appreciated in this connection when we remember the difficulty of sterilizing the skin of the inguinal and scrotal regions and the facility with which it is again contaminated.

These wires were not introduced as the usual transverse buried-wire suture, which had been found to give rise to so much trouble subsequently, but as a longitudinal, removable suture — a single wire for each layer to be closed, including the skin extending the entire length of the incision and parallel with the edges to be approximated.

In operating on the usual case of oblique inguinal hernia, three wires are used. The first approximates the internal oblique muscle and the upper portion of the aponeurosis of the external oblique to the inner edge of Poupart's ligament, carrying the cord to the outer angle. The second approximates the edge of the lower part of the aponeurosis of the external oblique to the same aponeurosis above in such a manner as to overlap the cord, which escapes at the inner angle, thus completing the imbrication, while the third wire is the usual subcuticular wire suture. (For the details of the introduction of these wires, see SURGERY, GYNECOLOGY AND OBSTETRICS for January, 1906.)

The great advantages of the wire sutures used in this way are:

1. The material is readily sterilizable.

2. The wires can be easily and quickly introduced.

3. They secure accurate approximation of the edges.

4. The firmness and rigidity of the wire maintains the edges in apposition against any degree of tension, and without fear of too rapid softening or absorption.

5. Owing to the non-hydroscopic properties of the wire, infection never travels along the suture.

6. When union has taken place, the wires are all easily withdrawn, leaving nothing either absorbable or non-absorbable buried in the tissues.

7. Owing to the strength of the union while the wires are in, patients may get up just as soon as they choose.

In regard to the question of whether the cord should be brought straight through the wall at the inner angle or obliquely from the outer angle, the writer believes that an oblique opening through a wall composed of several layers, as is the abdominal wall at this point, gives mechanically the strongest wall possible; therefore the restoration of the obliquity of the inguinal canal in hernia operations is a sound principle.

In some two hundred operations after this method, I have seen but one small recurrence, which took place at the inner angle.

Bull and Coley (*Medical Record*, March 18, 1905) report that in 1,311 operations in which the obliquity of the canal was restored there were but 6 recurrences, or 1 in 218+, while in 125 cases in which the cord was brought straight out at the inner angle, there were 5 recurrences, or 1 in 25.

In conclusion, the author believes that the wire suture, as described above, is a distinct improvement in the technique of hernia operations, and that when combined with the imbrication method of Andrews we have, as a rule, the best operation for the cure of inguinal hernia.

DEPARTMENT OF TECHNIQUE

TECHNIQUE OF MEDIAN PERINEAL PROSTATECTOMY

By ALEXANDER HUGH FERGUSON, M. B., M. D., C. M., F. T., M. S., CHICAGO

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Prepare the patients, when necessary, for several days with constitutional remedies and irrigations of the bladder. Instrumentation of the bladder or ureters is avoided as much as possible.

OPERATION

Give chloroform; fill the bladder with feeble antiseptic solution; pass a grooved staff (Fig. o) through the penis; put him in the extralithotomy position; open the perineum, membranous urethra, and prostatic urethra to the sinus pocularis; pass the index finger of the left hand into the bladder and feel the portion of the gland that is obstructing the flow of urine; split the capsule laterally (Fig. o); insert the finger within the capsule and enucleate the lateral lobes, liberating them until they are hanging by their attachments to the prostatic urethra. The finger may complete their removal in some cases without injury to the ejaculatory duct or prostatic urethra. When the attachments are very firm, cut them with a knife or scissors, or remove the prostatic tissue next to the urethra piece by piece with a biting and cutting forceps (Fig. o), but the finger must be in the urethra as a guide, while scalpel, scissors, or forceps are being employed. When the lateral lobes are situated high up, raising the bladder above them like a plateau, and the fingers cannot readily reach them, then insert the prostatic depressor (Fig. o) through the perineum into the bladder, and by its aid drag the prostate down within reach of the finger and accomplish the enucleation.

The bladder must not be damaged by awkward movements or senseless traction. So far in the operation no injury is done to the perineal muscles or ejaculatory ducts. Not a particle of the prostatic urethra has been sacrificed, and the middle lobe is not yet attacked.

The pathologic lobe is removed by one of two routes, according to its shape:

1. When it is peduncleated, pass the finger into the bladder, locate it, insert the forceps (Fig. oo), seize and deliver it into the perineal wound through the prostatic urethra, then sever its attachment by cutting or evulsion, as seems best. The mucous membrane of the bladder is unavoidably injured by this route.

2. When the middle lobe is sessile, having a broad attachment to the rest of the prostate, then this connection is found by following by the finger, which is usually behind the prostatic urethra, and the lobe enucleated. It may be expedient to employ the depressor in this manipulation. In cases whose procreative powers are gone, the

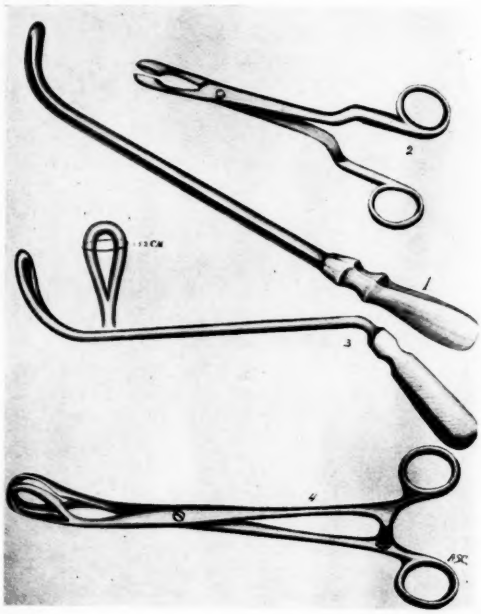

Fig. A
1. Grooved staff.
2. Prostatic cutting forceps.
3. Prostatic depressor
4. Large retention forceps.

ejaculatory ducts are deliberately severed to expedite and facilitate the completion of the operation. Otherwise great care is taken not to injure them.

During the operation the prostatic urethra is saved as much as possible, leaving at least its anterior mucous surface in continuity with the bladder. In certain deformities of the prostate it is sometimes almost impossible to save the inner portion of the prostatic urethra and its vesical orifice; as, for instance, when the gland protrudes upwards in one or more nodules, the pathologic mass surrounding and carrying the urethra in its center, the removal of the pathology usually carries with it the portion of the urethra that is encircled by pathologic tissue. Occasionally the obstructing tissue is in front of the urethra, sometimes overhanging the vesical orifice; then it must be followed along the side of the urethra and enucleated with

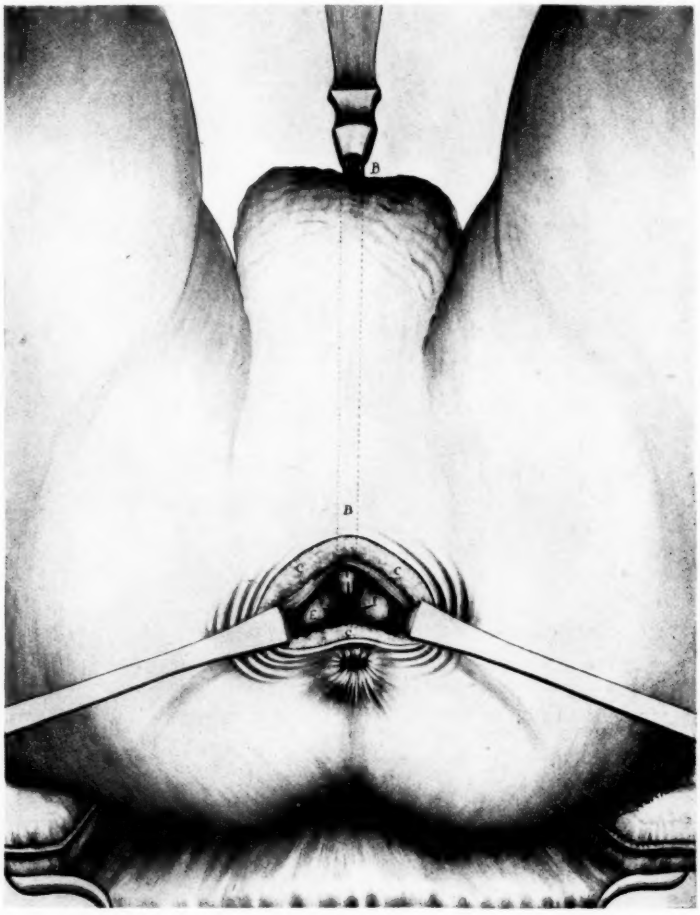

Fig. B.—Extra-Lithotomy Position
B. B.—Grooved staff.
C. C. C.—Median incision retracted.
E. E.—Enlarged prostate.
F. F.—Lateral incision in capsule.
H.—Median incision in membranous urethra.
I.—Bulb of urethra.

the fingers. It may be that the overhanging prostatic enlargement is polypoid in shape, and if so, remove it through the prostatic urethra by way of the internal vesical meatus. In cases of obstructive deformity, and no inflammatory attacks have occurred, the entire gland may be enucleated in one piece, without injury to the bladder, ejaculatory duct, or removal of any portion of the prostatic urethra. I have accomplished this several times.

While extirpating a very large prostate, operation is hastened by using large forceps (Fig. 0) to grasp masses of considerable size. If at any stage of the enucleation venous hemorrhage become too profuse, pass the depressor into the bladder, turn its beak to the suspected source, gently draw it down to compress the plexus of veins, pack the cavity with iodiform gauze, and desist from operative procedures for about five minutes, all the time pressing the bleeding surface between the instrument within the bladder and the gauze in the wound, supported by a pad firmly held to the perineum. This has been necessary only in three out of one hundred and two cases.

In a certain percentage of cases, the obstruction to the urinary flow is a bar of tissue at the neck of the bladder, or a stricture of the internal vesical meatus and a protrusion into the bladder. These conditions are easily diagnosed early in the operation, and treated by dilatation and removal with the cutting-forceps.

DRAINAGE

Always drain the bladder through the perineum. Use an ordinary retention-catheter, about a No. 23 American. If a very large rubber or metal tube is used, the trigone of the bladder is irrigated, and vesical tenesmus, and not infrequently very painful spasms, produced, demanding too early removal of the drainage-tube, or morphine to be administered, both of which act injuriously to the patient. On the other hand, should the drainage-tube be too small, leakage of urine occurs around it, and the wound becomes unduly irritated or infected. If, again, no drainage at all is used, both the cavity from which the prostate was removed and the bladder are liable to fill with blood-clots. In the two cases in which I used no drainage, I was obliged to anæsthetize the patients, wash out the bladder, remove blood-clots, and insert proper drainage for their comfort and safety.

In all cases, place strips of gauze around the retention-catheter — iodoform gauze when the kidneys are normal, otherwise use gauze, and permeate it with a feebler antiseptic powder. Remove the drainage at the end of about four days, and after this allow urine to emit by the perineum. Do not meddle with the patient for three or four days after this, unless retention of urine, frequent urination, or an elevation of temperature ensues. If simple retention is present, draw off the urine through the perineum as often as required, and nothing more. The retention is a good sign, for it indicates that the neck of the bladder has not been injured. In a week's time the patient will very likely leak urine constantly through the perineum for several days. He may become greatly discouraged and melancholic until the urine emits per vias naturales. Then he is himself once again. A sound should not be passed until about the eighth day, when granulation tissue is fully formed and the before cicatrization at the seat of operation has had time to begin. Inasmuch as fibrous tissue is not fully formed under the most favorable circumstances for about three weeks, and not mature for at least three months, the patient should occasionally be bougied during this time.

Should a stricture at the neck of the bladder take place, it should be freed by a perineal section, under a local anæsthesia of cocaine. I have done this on two cases, which should have been avoided by bougieing, as above advised.

REMARKS

In performing median prostatectomy, the only skin and perineal incision that should be made is the median incision. The raphe should not be severed transversely. Retractors should not be used through the perineum, if at all avoidable. The finger, along with the depressor through the perineum into the bladder, should alone be used. There is no hypertrophic deformity of the prostate that cannot be treated by a perineal prostatectomy.

TECHNIQUE OF VAGINAL SECTION

(Anterior and Posterior Colpotomy)

By HENRY T. BYFORD, M. D.

Two of the chief drawbacks to the successful performance of vaginal section are the difficulty of obtaining an aseptic field of operation, and the length of time required for its performance. Hence unusual care in cleansing the parts and a thorough mastery of the technique and method are of prime importance.

As it is almost impossible to free the perineum and vulva of pathological germs by a single washing and disinfection on the operating-table, it is advisable to direct the patient to take a hot alkaline sitz-bath and a copious hot vaginal douche twice daily for several days before the operation. The bowels should be thoroughly evacuated the day before, and the rectum washed out by means of one or more *plain water* enemas an hour or two before. A stimulating enema given shortly before the time set for operating is apt to cause a fæcal evacuation on the operating-table, and thus interfere seriously with an aseptic technique. Shortly before the anæsthetic is administered, the conventional set of four douches, viz., one each of soapsuds, of sterile water, of a 1-2000 aqueous solution of corrosive mercuric chloride, and last, another one of sterile water, are given. After the patient is anæsthetized and on the table, plenty of time is taken for a thorough disinfection of the field of the operation, viz., in scrubbing the perineum, vulva, and vagina with the soft soap, alchohol, and mercuric chloride.

After the retractors are introduced, the vaginal fornices and cervical cavity are disinfected by means of gauze dipped in the mercuric chloride, or other efficient germicidal solution; and if there is an endometritis, the uterine cavity is curetted, disinfected, and packed. During the operation the hands are from time to time dipped in a 1-2000 solution of mercuric chloride, to make sure of removing from them any possible contamination from the uterus, urethra, or rectum.

After having secured an aseptic field, it is well for those who have not performed many vaginal sections to pass a heavy silk thread through the anterior and posterior walls of the vaginal portion of the cervix, and by tying it close the os. The ends of the thread should be left long for the control of the cervix, in order to be able to dispense with the vulsellum forceps, which takes up valuable room in the vaginal entrance. Experienced operators, however, usually employ a vulsellum forceps to draw down the cervix; for their technical skill enables them to operate beside it without hindrance, and even to manipulate with it to better advantage than with the silk thread, by taking them off as occasion requires, and by taking a hold upon the corpus or fundus uteri if necessary.

In performing anterior colpotomy, the cervix is pulled down to or near to the vulva, and a transverse incision about 3 c.c. in length is made at the junction of the anterior vaginal wall with the cervix. It is well, before doing any more cutting, to catch the anterior edge of the incision at the median line with hemostatic forceps and hold it while the finger is hooked into the wound and made to separate the bladder from the vagina for a short distance. A median vaginal incision from 4 to 6 c.c. in length, beginning in the middle of the anterior border of the first incision and extending towards the urethra, is then made with sharp-pointed scissors. By means of a piece of gauze laid over the finger, the bladder is pushed upward from its uterine attachments until the perineal cavity is entered, care being taken to press firmly against the anterior wall of the uterus so that all of the loose fibrous tissue will be separated from the uterine wall and remain on the bladder-wall. In this way, danger of perforation of the bladder is avoided. The blood is now sponged away, and the hands dipped in sterile water to remove the blood and tissue *débris*, then in a 1-2000 solution of corrosive mercuric chloride, and then in sterile water, preparatory to the introduction of two fingers into the opened peritoneal cavity. After having explored the pelvic cavity by the fingers, the bladder is separated from the anterior vaginal wall to the extent necessary for the performance of the operative procedures that have by this time been determined upon.

For removal or resection of ovaries and tubes, it is necessary first to separate all adhesions, when either an ovary and tube may be pulled directly into the vagina by means of two fingers and grasped by ovary-forceps, or the fundus may be pulled forward into the vaginal cavity and the adnexa brought forward by reaching over the

corpus uteri. If the uterus is not too large, and the vagina not too small, the latter method affords a surprisingly easy access to the parts. Fibroid tumors may be removed by hooking a tenaculum into them, and enucleating them either by simple traction on the tenaculum or with the assistance of scissors. Before each tumor is entirely separated from its uterine connections, it may be utilized to hold the uterus while the exposed bed is sewed up with fine catgut, the last stitches being put in as last connections of the tumor are finally severed. It is seldom necessary to grasp the body of the uterus with tenaculum-forceps.

If the round ligaments are to be shortened, one of them is grasped near its uterine end by forceps and the ligament pulled down by others placed successively farther out upon it until all of the slack is taken up, when the loop can be puckered and sutured in to a solid mass or can be attached to the anterior portion of the fundus uteri.

If there is much relaxation of the anterior vaginal wall, a strip may be removed from either edge of the median incision and the closing sutures can be made to include a few fibers of the bladder-wall, thus obviating a separate anterior colpotomy. If vaginal fixation of the uterus is determined upon, the edges of the bladder peritoneum are attached to the fundus uteri by fine catgut sutures, the bladder pushed forward toward the pubes, and the vaginal sutures, beginning at the anterior end of the incision, are made to include a few superficial fibers of the anterior uterine wall. A slight opening may be left at either end of the incision to drain the connective tissue. The transverse incision may, as a rule, be closed by the last transverse sutures, which, by drawing its lateral ends to the median line, draws upon the connective tissue about the cervix. This aids in keeping the latter back where it belongs.

The posterior incision (posterior colpotomy) is simpler, and is usually preferable when there is retroversion and prolapse of the adnexa. The cervix is drawn forward behind the pubes, a tenaculum hooked into the posterior vaginal wall just behind the cervix, and a longitudinal incision made with sharp-pointed scissors downward along the median line from 3 to 5 c.c. If care is taken to cut the vaginal wall only, there can, of course, be no danger of wounding the rectum. The connective tissue immediately behind the cervix is then pulled forward by means of a tenaculum, and snipped with scissors for about two centimeters upward along the posterior uterine wall. Then the hand is disinfected, and the finger forces its way up behind the uterus until it breaks into the peritoneal cavity. As soon as one finger enters, it can, as a rule, be made to explore the pelvic cavity through an opening barely large enough to admit it. Should no intraperitoneal operation be required, the incision can be closed with a minimum amount of traumatism. As an exploratory operation, this method is ideal, and almost innocuous.

If an operation upon the adnexa be determined upon, the peritoneal incision is enlarged, the parts pulled into the vagina and grasped by ovary-forceps or by hemostatic forceps. The tying of ligatures about pedicles has to be done, as a rule, by the ends of the outstretched fingers, and requires some skill and great care in order to avoid lacerating the peritoneal folds, and to render the knots perfectly tight and secure. While suturing or placing ligatures, it is desirable to have the vaginal entrance held wide open by a posterior, a lateral, and an anterior retractor, but, while tying, all but the anterior one may have to be removed in order to allow the hand to press the perineum well into the pelvis and reach the parts more conveniently. In closing the incision, the peritoneal edges are grasped by forceps and included in the grasp of the catgut sutures that draw the vaginal edges together.

A transverse incision behind the cervix gives better access, and can be left open for drainage. But it bleeds more, and cannot be so easily and perfectly closed as the median, and hence should be reserved for special cases, particularly those in which a gauze packing is to be left, or in which free drainage is necessary.

OPENING AND CLOSURE OF THE ABDOMINAL WALL BY THE LOWER MESIAL INCISION

By J. CLARENCE WEBSTER, M. D., Chicago

PRELIMINARY CLEANSING OF THE SKIN

During the afternoon of the day previous to operation, the hair is shaved from the external genitals. The anterior abdominal wall is thoroughly washed with soap and hot water, and afterwards cleansed with alcohol. Pads soaked in a solution of formaline ℥fs, glycerine ℥iv, water ℥xii, are then applied to it. They are covered with paraffine-paper and a binder. These dressings are removed on the operating-table when the patient is ready for abdominal section. The skin is then washed with alcohol and dried. The following solution is then rubbed for three minutes into the skin of the anterior abdominal wall: Creoline 8 parts, glycerine 2 parts. This is then washed off with alcohol and the skin dried. Sterile coverings are then applied. For the great majority of diseases situated in the pelvis and lower abdominal region, the writer uses the mesial incision. This varies in length according to necessity. In such operations as removal of the appendages or shortening the round ligaments, the average length of the skin incision is about three inches, the lower end reaching the mons veneris. When it is necessary to extend the incision above the level of the navel, it is advisable to remove the latter entirely, in order that the most satisfactory closure may be obtained.

The first incision extends merely to the subcutaneous fat, and the knife with which it is made is put aside. As the deepest portion of the skin cannot with certainty be cleansed by any known method, the knife which divides it may carry infection, if used in the other layers; for this reason it is discarded. With another knife the subcutaneous fat is divided. Bleeding-points are caught with forceps only if the patient be anæmic or the jets of blood be large. In the great majority of cases, the hemorrhage is slight and ceases soon. The junction of the sheaths of the recti muscles is then divided and the edge of each muscle well exposed. The writer urges the importance of this step in relation to obtaining the best closure. If the patient is not already in the Trendelenburg posture, the table may be elevated at this stage. The fascia posterior to the muscles is then divided, and afterward the extraperitoneal fat. This varies in thickness. It is usually abundant when the subcutaneous fat is thick, and *vice versa*. Occasionally, however, it may be scanty, even in fat women. It may either be torn through with a finger or may be caught between two-toothed dissecting-forceps and divided with a knife. The outer surface of the peritoneum is thus exposed. The latter is then caught with two forceps, care being taken not to include subjacent bowel or omentum, and a slight incision made between them. If no adhesions are present anteriorly, air enters the opening and the viscera fall away from the anterior abdominal wall. The Trendelenburg position thus greatly diminishes the risk of injuring the viscera with the knife. When there are adhesions to the anterior wall, the careless use of the knife may cause injury of the structures in the line of incision. In such cases, careful search should be made for some point where no adhesions exist. When the latter are extensive, the writer sometimes succeeds in opening the peritoneum with the fingers or with a blunt instrument. Occasionally, when the omentum is extensively adherent, it may be necessary to carry the incision through it. If it is only slightly adherent, it may be pushed away from the abdominal wall with the finger.

Sometimes it is difficult to recognize the peritoneum. It may be very thin, and, together with the extraperitoneal fat, may be mistaken for the omentum. When there is much ascites, it may bulge outward and be mistaken for a cyst-wall. When it is thickened or adherent, it may also be mistaken for the same structure.

When the urachus is seen, it should be pushed aside. It should always be remembered that it may not be obliterated, and may thus communicate with the bladder, or it may be cystic.

When the incision is completed, it may be made temporarily larger by being stretched laterally between the hands.

CLOSURE OF THE INCISION

The peritoneum at the upper and lower end of the incision is caught in strong forceps and held by assistants. A sterile gauze pad is placed over the viscera. The edges of the peritoneum and transversalis fascia are then approximated by a continuous catgut suture (prepared by the formaline or iodine method), care being taken to evert the edges of the peritoneum in order to diminish the chances of adhesions. Before the edges are completely approximated, the gauze pad is withdrawn,

and strong gutta-percha silk sutures are then used to approximate the edges of the extraperitoneal portion of the incision. This material is very satisfactory, being strong, pliable, non-capillary, and tying firmly. Each one is threaded on two large full-curved needles, one being used for one side, the other for the other. Thus one needle is introduced into the wound under the rectus muscle, half an inch from its inner edge, and is pushed outward through the muscle, its anterior sheath-layer, the subcutaneous tissue and skin, emerging through the latter about a quarter of an inch from the edge; the other needle is then passed similarly, directly opposite, through the other portion of the wall. The writer prefers this method to the use of one needle introduced first through the skin, because in the latter procedure the needle may carry contamination from the skin into the deeper tissues.

The silk sutures are placed at intervals of about an inch. Before they are tied, the edges of the anterior layer of the sheaths of the recti muscles are approximated with formaline catgut sutures placed between the silk sutures. The latter are then tied, the skin edges being carefully approximated. Horsehair or collodion linen may then be used to bring the edges together, wherever there is any gaping. The abdominal wall is then exposed, and the skin is washed with alcohol and dried. The incision is covered with a narrow strip of chinosol gauze folded in two or three layers. Over this is placed a wider strip of gauze, which is fastened to the skin with collodion containing periodide of mercury in solution (1 in 4,000). Over this several layers of gauze are placed, and fastened in position by transverse strips of sticking-plaster. Sterile absorbent cotton is placed outside this, and is held in position by a many-tailed bandage.

男爵高木益寛

Baron K. Takaki

DEPARTMENT

NICHOLAS SENN FESTSCHRIFT

JAPANESE NAVY AND ARMY SANITATION

WITH A STATISTICAL REPORT OF THE MEDICAL DEPARTMENT DURING THE JAPANESE-RUSSIAN WAR, AND A HISTORY OF THE ERADICATION OF KAKKE FROM THE JAPANESE NAVY

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PART I. KAKKE IN THE JAPANESE NAVY

I ENTERED the navy in 1872, and began to treat kakke patients for the first time. Up to May, 1875, I had seen several hundreds of kakke cases at the Naval Hospital. In summer-time, several acute cases used to appear daily. At times, five or six cases had to be treated simultaneously, and house-officers were obliged to work very hard through the day and night. At that time, the kakke patients numbered 75 per cent of the patients. Various treatments were adopted.

For œdema, palpitation, etc.: Purgatives, digitalis.

For numbness and paralysis: Strychnine, iron, etc.

For hypersensibility of muscles: Purgatives, venesection, in acute cases.

These treatments were general, and there was no definite opinion as regards the food.

Here I present a table showing various details from 1878–1888

TABLE NO. I.

TABLE SHOWING THE GENERAL HEALTH OF THE NAVY

Year	Ratio of Cases per 1,000 of Force	Ratio of Deaths per 1,000 of Force	Ratio of Invalided per 1,000 of Force	Ratio of Cases of Kakke per 1,000 of Force	Ratio of Deaths per 1,000 of Force	Ratio of Invalided per 1,000 of Force
1878	3,928.45	12.37	9.72	327.96	7.07	4.20
1879	4,413.70	23.42	7.68	389.29	11.20	1.57
1880	4,604.32	12.71	8.68	348.06	5.45	1.82
1881	3,397.12	17.45	6.25	250.59	6.46	3.45
1882	2,531.77	21.60	6.29	404.49	10.69	3.56
1883	3,063.97	15.90	5.24	251.20	9.17	0.75
1884	1,865.02	7.98	7.80	127.35	1.42	0.18
1885	972.48	7.08	4.77	5.93	....	0.14
1886	577.46	7.43	6.14	0.35	....	....
1887	434.22	6.04	6.15	.....	....	....
1888	400.59	7.08	9.15	.....	....	....

NOTE—The Festschrift is published under the auspices of the Nicholas Senn Club. Papers herein published will subsequently appear in a bound volume or volumes, and be distributed to subscribers to the Festschrift.

In looking over this table, we find the average number of general diseases during 1878, 1879, and 1880 to be just over 4,327 per thousand; that is, one sailor suffered 4.32 times every year. Death averaged 16.34 per thousand, and those invalided 8.75.

The number of kakke patients was 349.33 per thousand. Those who died from it averaged 7.96, and those invalided, 2.45. Therefore the number of sailors lost through death, and invalided owing to general diseases, was 24.09 per thousand, and those lost through death and invalided from kakke 10.43 per thousand. If we now subtract 10.43 from 24.09, only 13.66 remains; therefore it is clear that if kakke can be wholly exterminated, the loss from illness will decrease to 13.66.

Conditions being such, it became my fixed purpose to discover the cause and treatment of kakke; but I thought that my knowledge of medical science was insufficient, and that I could not possibly discover them, and so the desire to go abroad in order to fit myself for attaining my object never left my thoughts, even for a short time. At last, in June, 1875, the desire was fulfilled, and I started for England. I reached London in July, and entered St. Thomas's Hospital Medical School in October. After staying there for over five years, I returned to Japan in November, 1880, and was made the director of Tokyo Naval Hospital in December. Thus I again had the opportunity to treat kakke patients. The general conditions on my return were exactly the same as before I went to England, and with the subsequent increase of sailors, more kakke appeared.

At times, when the disease was in full sway, we found the hospital too small, and often had to use neighboring temples. Moreover, acute cases were many, and the medical officers had a very busy and hard time. The conditions at such times used to strike my heart cold, when I thought of the future of our empire; because if such a state of health continued without the cause and treatment of kakke being discovered, our navy would be of no use in time of need.

In February of the year 1882 I was appointed vice-director of the Naval Medical Bureau.

About that time it was always found necessary to add an extra medical officer to the usual number on training-ships going on long voyages with cadets who had finished their school course, because kakke used to occur largelv during the voyage.

Again in 1882 there was a crisis with Corea, and three war-ships were sent to Chemulpo, Ninsen, and Saibutsu Bay. They stayed there only forty days, but, owing to shortness of hands, caused by the prevalence of kakke among the sailors, they met many difficulties. For example, on board the Hiyei, out of 330, 195 suffered. It was a very trying time for those in authority, because the ships would have been unable to cope with the North China squadron.

I discovered, in the same year, the following facts, after careful examination:

1. Albuminates contained in the food were not sufficient to make up the amount of albuminates discharged from the body.

2. On the other hand, the food contained too much carbohydrates.

If, now, we examine the table recognized by the scientific world as showing the comparative amounts of nitrogen and carbon discharged daily by a fair-sized adult, we shall see that carbon shows 310 grammes.

3. The food taken by our sailors showed nitrogen to carbon 18–28, or more.

4. The greater the difference between these proportions, the more kakke occurred; and the less the difference, the less occurred.

After discovering these important facts, I came to the conclusion that —

1. Kakke is caused by the disproportion of nitrogenous and non-nitrogenous elements (carbon and nitrogen) in food; that is, the amount of the nitrogenous element was insufficient to make up the loss, and there was an over-supply of the non-nitrogenous.

2. The symptoms of kakke patients are really due to these causes, and the good results obtained by purgatives are due to their power of ridding the body of the abundant carbohydrates.

3. The changes occurring in nerves, muscles, etc., are due to their inability to repair the waste tissues, and consequently to perform their physiological functions, while the superfluous carbohydrates interfere with the nutritive process.

In October, 1882, I presented a proposal to the late Count Kawamura, the chief purpose of which was to change the old system of dietary. When this proposal was put forward before a meeting, there was a good deal of opposition.

It was said that the change was too radical, and as an example the great disturbance caused by the change of dietary in the Italian navy, some years before, was referred to. Attention was called, also, to the proposed new system of fixing the amount of food by quality and quantity, instead of by monetary value.

In spite, however, of the difficulties caused by this opposition, my recommendations finally prevailed, and the new system was adopted.

Thus on January 15, 1884, Jungi Kawamura, Minister of the Navy, issued the following notification to the navy:

"It is hereby ordered that the following regulations in regard to the supply of food to the petty officers and men in ships and barracks shall be observed from February 1, 1884."

REGULATIONS IN REGARD TO THE SUPPLY OF FOOD TO THE PETTY OFFICERS AND MEN IN SHIPS AND BARRACKS

Article I. The food of petty officers and men in ships and barracks shall be under the control of the principal officer under whom they are serving, and the articles of food shall be bought with the money allotted for the purpose, and supplied to them.

Article II. The articles of food shall be as follows: Rice, bread, beef (fresh or preserved), salted beef, salted pork, fowls or eggs, fish, miso,[1] shoyu (sauce), vegetables (potatoes, carrots, radishes, cabbages, and onions), beans, wheat, flour, tea, fats and oils (suet or lard, butter, olive-oil, oil of the Sesamum orientalis), sugar (and starch), milk, vinegar, spices, alcoholic liquors, salt, pickles.

Article III. The articles of food shall be bought by the paymaster, by order of the officer in command, and they shall be given out after being examined by the surgeon.

Article IV. A record of the articles of food shall be kept by the paymaster, which shall frequently be examined by the officer in command.

Article V. If the preserved articles of food are found to be in bad condition, the matter shall be reported by the paymaster to the officer in command, who, in turn, shall order the surgeon or other officer to examine them, and shall report the matter to the Minister of the Navy Department, through the chief of different departments.

Table No. II

Daily allowance of food for one healthy person

(Fixed on the 2d of February, 1884)

	Momme
Rice	180
(Bread, 160 momme; biscuit, 130 momme.)	
Meat	80
(When eggs are substituted, each egg to be reckoned as equivalent to 10 momme.)	
Fish	40
(Where there is no fish, 20 momme of meat may be substituted.)	
Miso	14
Shoyu	16
Vegetables	120
Beans	12
Wheat flour	20
Tea	2
Fat or oil	4
Sugar	20
Milk	12
(If condensed milk, 1½ momme to be given.)	
Vinegar	2
Spices	0.3
Alcoholic liquors	
(This is in the case of Japanese liquors, and when other	

[1] A kind of sauce, made of beans, barley, and salt.

liquors are used, the quantity shall be fixed in proportion to the amount of alcohol contained.)

Salt	2
Pickles	20
Fruit (to be given with care).	
Total	568.3

If the amount of 51 momme of liquid food is substituted, there remain,—

When rice is used	517.3
When bread is used	497.3
When biscuit is used	467.3

It is not necessary to give the exact allowance every day, but if the food of two weeks is averaged, the average daily allowance should be equivalent to the daily prescribed amount.

In 1884 the general aspect of the naval hygiene had suddenly changed, and the number decreased remarkably, corresponding with the disease in kakke. The number of general diseases was 1,776.27 per thousand; that is, one person suffered 1.81 times a year. Deaths per thousand decreased to 7.98, and invalids to 7.80. The number of kakke patients averaged 127.35 per thousand. Deaths from it decreased to 1.42. Therefore the average of deaths and of invalids from general diseases decreased to 15.78, and that of kakke to 1.60.

On Feburary 13, 1885, I made a new proposal of using barley and rice equally, instead of rice alone, and of having this adopted from March 1st, as the season of kakke was approaching, under the following rules; that is, from March 1st to March 15th, only once, at breakfast; from March 16th to March 31st, twice a day, morning and evening; after April 1st, at every meal.

I did this for the following reason: Although the number of kakke patients had decreased considerably (almost to half that of the year before), and the deaths in the navy were so few (almost unprecedented since the rising of our navy), owing to the new food regulations of February, 1884, yet the disease had not yet disappeared completely, and we felt that we must make further efforts to exterminate it.

Similarly in 1885, the number of general diseases decreased to 974.85, and deaths to 7.84. Kakke decreased to 5.73, without deaths. Thus the number of deaths and invalids decreased to 12.14. In 1886, general diseases per thousand averaged 564.13; deaths, 7.43; and kakke, 0.35, without deaths or invalids. In 1887, general diseases per thousand averaged 434.22; deaths, 6.04; and invalids, 6.15. In 1888, general diseases per thousand averaged 400.59; deaths, 7.08; and invalids, 9.15.

The number of losses through deaths and invalids per thousand in 1884 was 15.78; in 1885, 12.14; in 1886, 12.57; in 1887, 12.19; and in 1888,

16.33. If we now compare these five years with the three years from 1878 to 1880, we find the marked decrease of general diseases and disappearance of kakke, with corresponding decrease in the loss of sailors year by year.

On March 28, 1885, I, for a second time, spoke on the preventive measures of kakke before the meeting of the Hygienic Society of Japan, the chief items of which were:

1. The report of the investigating committee placed on board the training-ship Ryujo during its voyage in 1883.

2. The report of the experimental voyage of the Tsukuba in 1883.

3. The results obtained through the examination of food supplied in 1883; that is, the very small quantity of nitrogenous food, as against the large amount of carbohydrates, the proportion being nitrogen 1 in 28 of carbon. In addition, the occurrence of numerous kakke and general diseases during that year.

4. The good results obtained by improved diet since 1884, and the difference brought about in the proportion of nitrogen and carbon by various changes in the proportion of diet. Soon after my speech, Toyosaku Murata, a member of the Hygienic Society, wrote a long letter to a daily newspaper against my opinion.

On April 6, 1885, Professor Ogata, of the Imperial University and Home Department, reported to Count Yamagata, Minister of Home Affairs, the discovery of kakke bacillus. In this he said that he found short blunt bacillus among cardiac muscles, liver, fats, kidneys, spinal cord, etc., and that he had confirmed it by growing it on a medium. He utilized rats, rabbits, and monkeys for experiments. He published a second report afterwards, but, after all, it came to nothing.

On the 18th of the same month, Kenji Usawa, a member of the Hygienic Society, attacked my opinion as regards the choice of diet, especially of barley and beans, in a long speech, but about a year afterwards he admitted to me that he had been wrong.

Similar sorts of attacks appeared as speeches or in writing continuously up to the end of 1887, but I kept complete silence, as I wanted to reply by practical results. Fortunately for me, the later results showed gradual improvement; that is, 41 kakke cases in 1885, only 3 in 1886, and none in 1887. This enabled me to retaliate by their publication.

About this time, Moriharu Miura, of the Imperial University, published a new opinion concerning the cause of kakke. He attributed it to the poisoning by blue fishes, because, he said, the symptoms simulate mineral poisoning, like lead, and since the improved system of dietary in 1884 the quantity of fish-supply had gradually decreased, and especially showed a great decrease from 1885 to 1889.

According to his opinion, he applied it practically to some regiments, but, as we have heard nothing of it since, it must be accounted as a failure.

By the beginning of 1890 the reformed diet was crowned with complete

success, and not only was kakke wholly exterminated, but the general diseases also were greatly decreased.

In the same year the imperial ordinance of reformed diet was issued, and thus was fulfilled my original object, to give a definite quantity of food material, and I was decorated with the Order of Treasure.

All through these years of hardships I tried to explain my purpose to others by comparing food to gunpowder. I said that the former is the primary force of the human body, as is the powder in the case of gun-shot; so it is just as important to select the food suitable for sailors as the powder for guns and rifles.

In former times, the food was supplied according to the monetary system, without any regard for quality or quantity. Therefore, when the price of articles of food was high, food sufficiently nutritious for the maintenance of health was not obtainable, although more could be had when the price was low. As a consequence, the distribution of food was unequal at times; and although the sailors could stand any hardships at one time, yet they could not at other times, owing to the want of food. Such a state of things is a serious danger to the country in time of need. Gunpowder is supplied, with a definite quantity of the best quality, without considering the expense. This is what I wished in the supply of food. By doing so we can maintain an equal supply of suitable food at all times, and also keep the officers and men in good health, so that they can bear hardships both in peace and in war. In 1890, as the success of the reformed diet became positive, the particulars concerning the preventive measures taken against kakke were compiled in a book and presented to the Minister of the Navy.

As a result of the reformed diet and the improvement of the naval hygiene during the six years from 1884 to 1889, the sum saved from the waste amounted to 1,232,416½ yen. On October 16, 1890, I, for the third time, had the honor of an audience with his Majesty the Emperor, and presented the following facts:

1. As I foretold on the occasion of the presentation to his Majesty in 1885, kakke is now completely exterminated from the imperial navy.

2. The present condition of the health of the imperial navy and the economic influence of the improved diet to the naval expenditure.

3. The fear of the inability of the naval officers and men for hardships in time of need is now gone.

On thinking over my past experience, I cannot hesitate to declare that the present improved condition of the imperial Japanese naval hygiene is due to having an able man at the head of the navy, and also to the education of the medical officers; because if we had not had such a man at the head, our suggestions would not have been adopted, or if the medical officers were not thoroughly educated, they could not have succeeded in the task of applying the preventive measures. The success of the new system and the attaining of my long-cherished purpose were accomplished through the late Count

Jungi Kawamura, who was the Minister of the Navy when I was made the Chief Director of the Medical Bureau. When I first assumed my official duties, I informed the Count that if he would give me full power to execute whatever I might deem necessary to maintain the health of the naval officers and the men, so as to make them fit for any duty, I should never interfere with his plans in other branches (education, training, and duties of officers and men). He then answered, "All right." The result was, that whenever I wanted to try any new plan, he always supported me in carrying it out, as far as circumstances allowed.

I am glad to tell you that the victories in the war between China and Japan, and the victory after victory over our enemy during the recent war, were largely attributed to the merits of my efforts during my active service in the navy, and I was made Baron on the 3d of March, 1905.

Finally, let me state that:

1. The disease kakke, or bari, can be artificially produced in a human body.

2. It can be positively prevented by diet. The disappearance of the disease from the Japanese navy for more than 22 years is the best proof of the effects of any method.

3. There are many trustworthy examples, illustrated books, the outbreak and non-outbreak of the disease, but I have not time now to state them.

Part II

REPORT OF MEDICAL DEPARTMENT FOR THE JAPANESE-RUSSIAN WAR

TOTAL NUMBER OF DEAD AND WOUNDED IN THE NAVY IN THE JAPANESE-RUSSIAN WAR ENDING ON DECEMBER 5, 1905

Classification	Total Number of Dead and Wounded	Instant Death	Subsequent Death	Wounded
Officers	307	159	14	134
Gun-room officers	93	51	4	38
Petty officers	891	511	27	353
Men	2,333	1,139	68	1,126
Miscellaneous	65	31	4	29
Total	3,689	1,892	117	1,680

Percentage of death-rate, including subsequent death, is 54.0%
Instant death 51.0%
That of returning to duty after wounded 90.8%
That of invalided 6%
In hospital 3%

NUMBER 1

NUMBER OF DEAD AND WOUNDED IN THE ARMY IN THE JAPANESE-RUSSIAN WAR, 1904–05

Instant Death		Wounded		Unknown		Loss		Total
Officers	Petty Officers and Men	Officers	Petty Officers and Men	Officers	Petty Officers and Men	Officers	Petty Officers and Men	
1,657	41,562	5,307	148,366	53	5,028	7,017	194,956	201,073

Sub-officers included with the officers.

The table was made from the reports received till the 30th of June, 1905, concerning troops in Manchuria, and till the end of August, 1905, concerning troops in Corea and Sagalien.

The proportion of instant death of officers is 1 to 3.25, and that of petty officers and men is 1 to 3.56. The table shows that the officers died instantly in a larger proportion than petty officers and men.

The proportion of death, including both instant and subsequent death, is 1 to 3.94. (The number of deaths is 1,522.)

NUMBER 2

NUMBER OF PATIENTS TAKEN INTO THE FIELD-HOSPITALS FROM THE BEGINNING OF THE WAR TILL THE 31ST OF AUGUST, 1905

Wounded			Accidents			Infectious or Contagious Diseases			General Diseases			Total		
New Cases	Cured	Dead	New Cases	Cured	Dead	New Cases	Cured	Dead	New Cases	Cured	Dead	New Cases	Cured	Dead
146,813	15,018	8,304	16,456	4,147	237	17,866	2,041	5,961	203,270	23,063	6,850	384,405	44,272	21,352

The above table may have to be corrected afterwards.

The proportion of death from infectious and general diseases (the total number is 12,811) to that of death from wounds is 1 to 4.

NUMBER 3

TABLE OF TERMINATIONS OF THE PATIENTS TRANSPORTED FROM THE FIELD TO THE INTERIOR

Classification	Officers			Sub-officers			Petty Officers and Men			Non-combatants			Total
	Wounded	Infectious or Contagious Diseases	Miscellaneous	Wounded	Infectious or Contagious Diseases	Miscellaneous	Wounded	Infectious or Contagious Diseases	Miscellaneous	Wounded	Infectious or Contagious Diseases	Miscellaneous	
Cured	1,097	.....	930	287	1	227	50,690	460	73,327	64	50	10,477	147,596
Invalid	3	.....	10	2	.....	1	11,355	.....	4,113	....	.....	.....	15,484
Death	26	1	18	3	3	3	935	311	2,125	1	40	138	3,601
Miscellaneous	1,089	9	801	346	.....	167	30,941	1,095	57,207	51	133	1,072	98,891
Remains	137	1	178	27		51	9,604	42	14,790	3	10	1,095	25,938
Total	2,352	11	1,937	665	4	449	109,525	1,908	151,562	119	233	12,782	

REMARKS

This table is made referring to the reports received from the beginning of the war till the end of August, 1905.

The miscellaneous includes those cases sent back to their own homes, and discharged from other circumstances.

This table may have to be corrected afterwards.

The total number of patients transported back from the field to the interior is 281,587. The proportion of the wounded to that of infectious and general diseases with accidents is 100 to 150.

NUMBER 4

NUMBER OF NEW CASES IN SUMMER MONTHS

		June	July	August	September
1904–05.	The whole army ..	7.63%	8.70%	7.92%	5.63%
1903.	In peace	11.06%	13.66%	13.91%	11.55%

NUMBER 5

TABLE OF INFECTIOUS OR CONTAGIOUS CASES FROM THE BEGINNING OF THE WAR IN 1904 TO THE LAST DAY OF AUGUST, 1905

	Small-pox		Scarlet Fever		Typhus		Diphtheria		Typhoid Fever		Dysentery		Kakke	
	New Cases	Deaths	New Cases	Deaths	New Cases	Deaths	New Cases	Deaths	New Cases	Deaths	New Cases	Deaths	New Cases	Deaths
Total	347	33	10	2	51	11	9	1	9,722	4,073	7,642	1,804	97,572	3,956

This table may also have to be corrected afterwards.

NUMBER 6

COMPARATIVE TABLE OF INFECTIOUS AND CONTAGIOUS DISEASES PER 1,000 MEN

	Cholera		Typhoid Fever		Dysentery		Malaria	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Japan-China War	82.77	50.86	37.14	10.98	108.96	15.72	102.58	5.29
North China trouble	.....	.....	36.42	12.14	108.71	33.65	95.61	2.20
Japanese-Russian War.....	.....	.....	9.26	5.16	10.52	2.68	1.96	0.07

The table is made from the reports received from the beginning of the war till the last day of May, 1905; also, may have to be corrected afterwards.

GENERAL PRECAUTIONS

During the recent war the most strict precautions were taken to keep the men free from any epidemic disease by the execution of various plans formed at the beginning of the war. For instance, as to the supply of water, there was provided a water-carrier drawn by four horses, a water-boiler cart drawn by one horse, and boiled-water stations, as well as a small provision-pan. Thus a soldier could have boiled water by boiling it in his own pan, when necessity obliged him. At the boiling-water stations during the march, the soldier had to fill his own canteen with boiled water. During the march, when his own canteen was exhausted, he had to get water from the water-boiler car, which always accompanied the troops, and the water-carriers were almost always with them. When water had to be procured from a stream or river, the men were ordered to get the drinking-water from the center of the stream, so as to avoid the impurities coming from the banks of the rivers; even then the water was boiled. From experience they found that there were difficulties in knowing whether the water which they could get was pure or otherwise during the night. Then, of course, they could see the water, but the light was not sufficient to tell whether it was pure or not; therefore they had to take great precautions during the night march.

FOOD

Almost all foods were sent from the interior to the front, under strict superintendence of officers in the ranks; but, of course, whenever they could get fresh food materials wherever they went, they took keen precautions not to get anything injurious from the natives, because there was some danger of poisons being mixed with the food. Thus we tried our best to give them fresh food, as far as possible. During severe winter they had to keep their provision-box wrapped in a piece of flannel and kept under their overcoats, so as to prevent its freezing. They also were ordered to cook their rice each time they ate, according to the circumstances, and also, at times, they had biscuit in place of rice and barley. During the hottest part of summer-time they added a small quantity of acetic acid to the rice and barley, cooked, in order to prevent decomposition.

Besides a regular supply of food materials, the soldiers were allowed to buy eatables, according to special regulations laid down prohibiting them from buying then directly from the natives. Sake was allowed to each of them, in average of two ounces, as an extra, under strict superintendence of the medical officers. Sweets were allowed to those who had no inclination to drink sake.

CAMPING

As to camping wherever they went. First of all was sent a so-called camping party, consisting of line and medical officers, so as to select a

place where they could be safe, both from a strategical as well as a sanitary point of view, and medical officers inspected the source of water-supply, the conditions of houses found, and the people living therein. When medical officers found any water which was unfit to drink, they put up notices cautioning the troops not to drink it, and in cases where there was a likelihood of the soldiers drinking it, according to some circumstances, a guard was kept on watch.

As to the people, they were inspected to see whether they were suffering from any preventable disease,and on finding them suffering from such, they procured special quarters, where they were sent and cared for by the medical officers.

As to the houses in which they wished to make shelters for them, and also those where the people lived. In the first place, they cleaned the house from corner to corner, and disinfected the parts which they considered dangerous, and they thoroughly cleaned and disinfected the grounds about the houses, also, as well as those outside of the camping-tents, and afterwards cleaned daily, and burned all the combustible refuse by fire, or buried the same. As to excrementa, the same methods were used as others use.

As to flies, the soldiers had considerable trouble with them. At the beginning they tried to kill them by various means, but they were so numerous that the soldiers were practically overwhelmed by their invasions. Soon it was found that they laid their eggs in manure as well as in refuse, and after that the soldiers tried to burn all the manure and refuse as quickly as possible. Thus the men were able to diminish the number of them. As to the mosquito, they had a mosquito-net to prevent bites.

CLOTHING

Besides washing clothing as often as opportunity offered, the troops had a disinfecting apparatus with which the clothing, etc., belonging to each soldier was disinfected or sterilized whenever we thought it necessary, and each apparatus had a capacity for disinfecting the clothing of twenty men at a time, and I believe that more than one hundred apparatuses were used, and I still further believe they were a very useful means of preventing any epidemic disease from spreading.

SENDING THE TROOPS TO THE FRONT

Before the troops were sent out to the field, they were made to undergo a strict inspection by medical officers, to see whether there was any danger of any form of epidemic disease amongst them, and when they found such, they were all disinfected before being sent out.

As to transportation of troops from the front back to the interior, all the troops were disinfected at quarantine stations and were allowed to land. As to quarantine stations, we are now employing three stations, the principal

of which is that of Ninoshima, where they disinfect six thousand men in the course of twenty-four hours. As to disinfection, the means they employ there are baths, steam sterilization, and use of formaline with steam, which I do not think it necessary to describe, because they are all the same as those you have in use in your own quarantine stations.

As to transport ships. All of them were made to undergo thorough cleaning and disinfection each time they came back to the ports, and the interior of them was cleaned and disinfected with steam, etc.

I. INDIVIDUAL PRECAUTIONS

1. Onychia (swollen finger), boils, toothache, etc., even slight, disturbs the free action of the body and lowers the fighting strength of the army. As these are generally caused by carelessness, everybody ought not to forget to keep himself clean, even in war-time.

2. When under active service, it is generally impossible to have warm baths, and therefore each should wash himself with cold water, often, about the axillæ, inner sides of thighs, pubes especially.

3. The hair of scalp should be cut short, and washed, so as not to get head dirty.

4. Every morning the mouth and teeth should be cleaned, so as to protect against decaying teeth.

5. The hands, owing to frequent use, get easily dirty, and in consequence are very liable to get inflamed. Besides, through them the pathogenic organism may enter and cause trouble. Therefore wash them often with soap and water.

6. The feet, like the hands, also get easily dirty. Moreover, they become moist thorough boots, and give out a peculiar odor, and often produce boot-sore. So, when getting into quarters, they must be washed. Those who ride should wash the inner side of thighs and buttocks, so as to protect against saddle-sore.

7. As the dirt in nails often contains poison, they ought to be frequently cut and cleaned, but do not cut them too deeply so as to wound fingers.

8. In winter, when hands and feet are rough and fissured, there is always the fear of poison entering through them, and therefore they should be washed, dried, and treated with a suitable ointment.

II. CLOTHING

1. The chief purpose of dress is to protect against cold, but abundant clothing causes sweating, and is injurious. During working hours, it should be light, but enough, so that you don't feel cold even after sweating. During rest, or sentinel duty, or scouting, the body should be protected with various kinds of winter clothing.

2. The overcoat is an indispensable article among winter clothing, as it often acts as your bed. If it gets wet, through rain or snow, it should be dried instantly you get into quarters.

3. Shirts, under-nickers, socks, should always be washed and kept clean, because when they get dirty, it is no good to keep only your body clean.

4. When repairing tear in under-nickers, try carefully not to make the sewing-seam irregular, — especially for those who ride,— because it often causes saddle-sores.

5. As the abdominal belt is a good protector against cold, it should be worn regularly when given.

6. The socks should be often changed, because torn or wet socks frequently cause boot-sores, chilbains, etc.; when you have worn out your socks, or when too cold with socks alone, you should bind feet with any linen or woolen cloth (flannel best) and put on shoes.

7. Shoes should be kept soft, because the sore is caused by not only the bad fit, but also by hardness. The best way to keep leather soft is to use oil.

8. The method of making hardened shoes soft is as follows:

(1) Put them in water, or brush with wet brush until they become soft.

(2) Wipe off the water on the surface and then let the leather absorb soluble lard by applying it under the influence of sun or stove or bonfire.

9. As the shoes of infantry are the horses of cavalry, they should be well looked after.

10. As it is impossible to escape injury when the shoes become torn, they should be carefully preserved. Wet shoes should not be suddenly dried, as it is not good for preservation. They should be bound in warm straw or woolen cloth, and should be dried with gentle heat graduallv.

11. When the shoes get torn, and there are no fresh ones to change, the feet should be bound first with dried grass, straw, etc., and then several times over with cloth, and finally should wear waraji (Japanese straw shoes).

III. FOOD

1. The bodily strength is kept up by food, and it is required to greater extent than usual in war-time. If you don't eat enough, you soon get tired and cannot work.

2. Besides, you cannot bear cold well, and often become ill; therefore sufficient food ought to be taken, so as not to feel hunger; but over-eating and drinking are injurious.

3. When very tired or very hot, do not take food at once, but wait a short time before doing so.

4. Auxiliary food of unusual smell or taste should not be eaten.

5. As the ripe fruits are good for health and have power to ease thirst, they may be eaten after peeling the skin; but unripe fruits often cause diarrhœa, and they should not be taken, especially when dysentery or cholera is prevalent.

6. As fresh eatables and water often contain poisons, they should not be taken in that state.

7. Any kind of water, if having been regularly used before, may be used, but, if possible, boil it before drinking.

8. The water in old wells, ponds, or marshes, even when boiled, is dangerous, and it should not be used, unless necessity compels.

9. The food left behind by enemy, the well-water in the district newly captured, or any drink or eatable among inhabitants, should not be carelessly used, as there is danger of poison having been mixed.

10. Tea, coffee, etc., are good tonics for driving away weariness and tired feeling. Tobacco is also good for the same purpose.

11. Wine or alcohol, if taken moderately, is beneficial, and recoups the energy, but in large quantity is very injurious. When there is danger of gangrene, or of death from cold, sunstroke, or fever, it should be forbidden.

IV. DURING MARCH

1. On the day before starting, the shoes or socks should be well arranged, the body washed and cleaned, the food well chosen, and sufficient sleep taken. If you slept little or badly, through drinking about, you will soon get tired during march, and, moreover, are liable to suffer from cold and sun more easily.

2. Any string or laces wanting tying, or buttons requiring buttoning, should be carefully attended to before starting, because these cannot be easily done during march, owing to the numbness of hands through cold.

3. Fill the water-bottle with either boiled water or tea before starting.

4. During march, try to keep step regular, and do not walk with head down. On climbing hills or marching against wind, do not talk much or smoke.

5. Never get out of column, unless compelled by circumstances, because running after in order to catch up with the column tires one a good deal.

6. Try to drink as little as possible during march; the bad habit of drinking water when thirsty induces and does not stop thirst.

7. When hot, do not take a large quantity of water at once, because it is injurious, and at times causes death; therefore drink water gradually, in small quantity.

8. During march, if you get thirsty, do not eat ice or snow, because it only increases the thirst.

9. During rest, button up your collar, and let not the sun shine directly on your head.

10. Lying down on the wet ground when feeling hot is injurious. Therefore, choose dry ground, or sit on the ground after covering with straw, dead grass, or fallen branches.

11. Always attend to your feet when resting. If there is any sign of redness, go to the medical officier and ask for ointment to rub on them. Besides the ointment, a specially prepared powder may be used.

12. Pay, also, careful attention to socks. Pull out all wrinkles, and afterwards wear them by changing from one side to the other. If wet, put on fresh new ones.

13. In order to recover energy when tired, the feet may be rubbed with wet cloth, the hands face, and neck may be washed with cold water.

14. When resting, if impossible to obtain good water to ease thirst, keep a pickled plum in the mouth, or bite harmless things, like leaves, straw, etc., because they ease thirst for a time.

V. HOUSES OR QUARTERS

1. *Barracks*

1. In Corea and China, the houses are warmed by heating the floor. If the Japanese hibachi (charcoal fire-pot) be used in these houses, there will be danger of death through poisoning by carbonic-acid gas.

2. If there is some damage to the stove, and it cannot be used, the hibachi may be used, but in that case the windows should be left open all night, or new windows might be cut, so that there will be good ventilation of air.

3. In Corea and China, the flies are exceedingly numerous, and they, coming in contact with food, become the medium of infectious diseases. Therefore they want special care. The bed-bugs are found almost everywhere, and often disturb your sleep. Besides, as they sometimes cause skin disease, some special precautions must be taken, or ask the medical officer to give you medicine to get rid of them.

4. In Corea and China, there are no lavatories in the houses; therefore the temporary latrine is generally built by the headquarters; but if it cannot be done in time, each should dig a hole, and after excreting, cover it with dry soil, so as to prevent flies from coming in contact with it and becoming the medium of infectious disease.

2. *Open Quarters*

1. If you have to sleep out in a tent, always keep the tent open during the day. In warm weather, even at night-time, keep open several places, so as to let the air in.

2. Straw, dry grass, fallen leaves, etc., used for bed in the tent should often be taken out and dried in the sun.

3. In warm weather, the tents should be advantageous to arrange in the open method, and if cold, in the closed method. Those not in use should be used for covering the ground, to protect against moisture, or be used to keep out cold by binding the feet.

4. In winter, the feet, especially, get cold, and are liable to get frozen easily. Therefore, the best way is to wear double or several layers of socks, then cover them with straw, and finally use the overcoat when going to sleep.

5. When snow-laden, do not sleep on the ground, because, even hardened, it gradually begins to melt, and by wetting the clothes takes away the bodily

heat. In consequence there is danger of gangrene, or death from cold. Therefore, always clear the snow off the ground and keep it up around, so as to make a snow bank. Then sleep in the cleared space but the entrance should be made contrary to the wind.

6. The lavatories or latrines want the same care as in barracks.

VI. ON MARCH

The most common sources of trouble to the army when on the move are boot-sore, cold, and thirst. As the first has already been mentioned, we shall give some points about the last two now.

1. *Cold*

1. The common points of freezing are the tips of hands, feet, ears, and nose; that is, the parts lacking sufficient nutrition, owing to poor circulation. Therefore, when on move during winter, pay special attention to these parts. Moreover, before starting, rub the hands and feet with ointment.

2. The radical preventive measures are to wear warm protective winter clothing, with good nutrition and sufficient sleep; because, when the sleep is insufficient, one gets easily weary by exercise, and low-spirited, or when sufficient nutrition has not been taken, the body heat is lower, and in consequence he cannot have strong resisting power, thus becoming liable to suffer from freezing or die from the cold. Therefore, in winter, sufficient food should be taken, and as much sleep as possible.

3. Spirits give temporary warmth to skin, but, on the other hand lower the body heat, and so become the cause of freezing and death. Therefore never take spirits.

4. Exercise is very important, because exercise increases the body heat, therefore, even when on guard, and standing on one spot, always keep step to time and the feet on move.

5. Massage is another form of local exercise. If you lose feeling in ear, nose, hands, and feet, you must begin rubbing at once, because that is the first sign of freezing.

6. Head-gear, gloves, and socks are protective mediums against cold. So if there is any tear, mend before using.

7. Bare hands, especially when moist, should not touch frozen metals, because they cause burns.

8. The part most frequently attacked is the feet, owing to the socks becoming wet and frozen together with feet. Therefore the most important preventive measure is to keep out the water from entering the shoes or boots. Pay especial attention when crossing the river or walking in the snow. Also, if the socks become wet from water or sweat, change them during rest. The feet are important, and it has been said by a famous ancient warrior that the victory rests in the feet.

9. As the head of penis sometimes becomes frozen, take care not to forget to button the trousers after urinating.

10. When chilblains occur, the following are the stages:

(1) Cold.
(2) Pain.
(3) Loss of sensation.
} First period.

It is not advisable to appiy warmth then. The best way is to rub with snow or cold, wet bandage, and then put on an ointment.

If the disease advances, the color of skin changes and blebs are formed. Even at this stage the disease can be stopped without progressing to serious stage, by medical treatment.

11. If you find any of your friends falling on the ground after becoming hard all over the body and on the point of death from freezing, try the following measures till the medical officer arrives:

(*a*) First carry him to a room without fire, and take off all his clothes, then rub the whole body with snow or cold, wet cloth.

(*b*) If you find limbs becoming soft while making friction, put them in water and continue to rub the whole body while pouring slowly hot water.

(If there is no vessel to place the patient in hot water, try artificial respiration at once.)

(*c*) It hot water becomes like warm, take him out and dry. Then remove him again into the fireless room, on a bed, and try artificial respiration.

(*d*) If he recovers respiration, give him a warm tea, and place him in a warm bed.

12. During the march in snow, many suffer from snow-blindness, or snow-eye. Therefore avoid looking down, and wear slightly dark spectacles or light-shade to protect against sunshine.

13. Do not cross the lake with hands in pocket, because if you fall in by some chance, you will not be able to use them.

2. *Sunstroke*

1. It is a dangerous disease, occurring frequently during march in hot weather.

2. Men unaccustomed to marching, or of weak constitution, or after severe exercise or illness, or not having had sufficient sleep, or those of loose habits, or those whose stomachs are empty, or suffering from thirst, and especially those addicted to the drinking habit, are easy victims of this malady.

3. The points to be remembered are as follows:

(*a*) Good living.

(*b*) No drink.

(*c*) No not forget to fill water-bottle so as to provide for thirst.

(*d*) Do not miss either food or sleep.

(*e*) Besides, always start early, so as to avoid the mid-day heat, and rest at that time.

(*f*) Open the column, lessen the burden (baggage), open the chest, letting in the air.

4. The early signs are:

(*a*) Profuse sweating. Sweats falling from face in drops, running into eyes and neck, accumulating in epigastric region.

(*b*) The head, and skin all over the body, becomes heated.

(*c*) Respiration difficult, palpitation, chest uneasy.

If you are in any of these conditions, ask leave to drop out, and rest in the shade. Then take a drink of water and open wide the coat and shirt. Next wash the head and wipe the chest with cold water. If you resort to these remedies, you will soon recover.

5. If you go on staggering in spite of these signs, the sweat will stop, the skin become dry, the saliva will stick in the mouth, the pulse become weak, the respiration shallow, and finally you will fall into a state of coma. If not treated in time, death is sure to result.

6. If one falls down in that state, treat him as follows till the arrival of medical officer:

(*a*) Carry him to the shade, giving plenty of fresh air, and take off his coat and trousers. Loosen the shirt, and lay him with the upper portion of body raised. Forbid crowding.

(*b*) Wash the head, chest, and all over with cold water, or cover the body with a wet cloth and pour water to keep it wet.

(*c*) If respiration is difficult, apply artificial respiration.

(*d*) While doing artificial respiration, use fan, etc., all the time.

(*e*) Rub hands and feet.

(*f*) When he becomes conscious, let him drink a large quantity of water.

VII. INFECTIOUS OR CONTAGIOUS DISEASES

1. The cause of infectious and contagious diseases is not internal, but the poison always comes from the outside, and wants especial care for self-protection.

The poison is a very minute organism, generally not visible, and if it once gets into the body and obtains a suitable spot, it will go on progressing, become the cause of grave disease, and finally take the life. Since ancient times there have been more deaths from diseases than from wounds in war-time.

The chief instrumentality of this dreadful result is infectious disease. Therefore the sanitary arrangements by the headquarters are very strict, but each soldier should pay strict attention.

2. The most common disease attacking the army, both in peace and war, is typhoid. The poison enters the body chiefly through the medium of food; therefore do not eat uncooked food, or drink unboiled water. This is very important. Besides, the poison is sometimes introduced into the body through the mouth, owing to its being attached to clothing and fingers; therefore always brush the dust off your clothes and wash the hands before eating.

3. The poisons of dysentery and cholera are also introduced through food, and require similar care as typhoid. Moreover, as unripe fruits cause diarrhœa easily, do not eat them.

4. As small-pox still prevails in China and Corea, do not go anywhere near the infected houses, even if you have been vaccinated.

5. The pest generally enters the body through a small wound. So if there is any sign of pest epidemic, always go to a medical officer, even if the wound is slight. Moreover, you must not walk in bare feet, and must keep gloves on.

As rats or flies are the chief causes of this disease, try to get rid of them as much as possible, and do not let them touch food.

6. Malaria is introduced by mosquitoes. Therefore always keep them off by mosquito-net or other methods.

7. Gonorrhœa, syphillis, etc. These diseases are contracted through coming in contact with women suffering from them. Therefore, keep in mind that the Chinese and Corean loose women are all infectious, and do not touch them. If you do, you will not only invite calamity, with shame to yourself, but leave undying trouble to your descendants.

8. Among the infectious ophthalmic (eye) diseases, the most important is the infectious conjunctivitis. This is introduced through using the same wash-basin, towels, etc.; therefore, when this disease prevails, avoid using the same utensils, but if there are no other available vessels, wash them several times with clean water before using.

Another disease to be careful of is gonorrhœa, because the eyes are often attacked, through touching them with infected hands, and the sight lost.

TREATMENT OF WOUNDS

Our army surgeons were in favor of conservative surgery, and all were treated aseptically, as far as possible. In a great many cases, with the first dressings applied, they healed by the end of a week or ten days, without having changed the dressings. All major operations were avoided as much as possible at the front.

The hospital was established in April, 1904, and the report is made until November 30, 1905, during which time the hospital had 203,782 cases, whence 162,885 were transferred to other hospitals; but the average number of patients in the hospital was about 5,000, and the largest number the hospital had was 10,000 cases at one time, and almost all serious cases were kept in the hospital, because they were unfit for transportation, yet the result was so good that the ratio of death and invalided is but a little over one per cent. Almost all the wounds of the soft tissues have healed within about ten days; those with injuries to the bones have had favorable courses, except those who were wounded at the siege of Port Arthur. The many men who were wounded in the head and chest have recovered from the wounds received, and there were also many cases of aneurismal varix, wounds of nerves requiring operations, and the number of operations performed at the hospital amounted to more than 3,500.

今夕「セセン」倶楽部ノ招待ヲ蒙リ脚氣病ニ関スル余ノ盡瘁ノ成績並ニ日露戦役中死傷者ノ統計ニ付會員諸君ノ前ニ陳述スルコトヲ得ハ余ノ最モ光榮トスル所ナリ

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EDITORIALS

SURGERY, GYNECOLOGY AND OBSTETRICS

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APRIL, 1906

THE NICHOLAS SENN FESTSCHRIFT

In this issue of SURGERY, GYNECOLOGY AND OBSTETRICS we begin the publication of the *Nicholas Senn Festschrift*, and we celebrate the inauguration of this important department by publishing as a frontispiece a reproduction in color of Henry Michalowski's famous portrait in oil of Professor Senn. This portrait we reproduce through the courtesy of the University of Chicago, to whom it was presented by Mr. Hempstead Washburne.

The new department proper begins with a paper by Baron Takaki, Surgeon-General of the Imperial Japanese Navy, which is accompanied by an excellent portrait of the author. The paper was written in English by Baron Takaki, and delivered in person to the Nicholas Senn Club at the meeting of February 10, 1906, on which occasion he was the guest of honor.

The *Festschrift* is the indirect outcome of the great banquet given in honor of Professor Senn by the medical profession in November, 1906. A few of Dr. Senn's close personal friends conceived the idea of organizing a club in his honor, to be known as the Nicholas Senn Club, and to have for its principal object the publication of a *Nicholas Senn Festschrift*. The organization was immediately effected under the presidency of Dr. Fernand Henrotin, and a publication committee began at once the organization of the *Festschrift*.

The *Festschrift* as planned will consist of a number of important articles written on surgical subjects by eminent surgeons in all countries of the world in which scientific medicine is practised or taught. A number of very valuable contributions have already been solicited and promised, and are in preparation by their authors. These contributions, with portraits and short biographies of the authors — including also a biography and portrait of Dr. Senn, will be published in one or two handsome *de luxe* volumes, which will be distributed to the subscribers to the *Festschrift* in the course of eighteen months or two years.

In the mean time, as the papers are furnished by the various contributors, they will be published in this journal, in a special department established for the purpose, known as the "Department Nicholas Senn Festchrift." It is obvious that this will give the *Festschrift* an added influence, as the individual contributions will become a part of general surgical literature, and will have the advantage of a general circulation in SURGERY, GYNECOLOGY AND OBSTETRICS, in addition to the circulation of the completed volume.

SURGERY, GYNECOLOGY AND OBSTETRICS keenly appreciates the honor conferred upon it by making its columns the first depository of these valuable papers, and the editors feel that

the subscribers of the journal are to be congratulated that they are to have, during the next two years, this priceless material placed before them, in addition to the regular contributions to the magazine.

FRANKLIN H. MARTIN.

VACCINATION IN SURGICAL INFECTIONS

The recent advances in the study of immunity and serum therapy provide little aid in the treatment of infections which are essentially surgical in character. Serums directed against the staphylococcus, streptococcus, and the tubercle bacillus have not shown themselves to of appreciable value in the hands of most observers. Likewise, active immunization with these organisms, or some one of their products, has not, up to the present time, obtained a recognized place as a therapeutic measure. Accordingly, it would seem to be with good reason that the mind of the surgeon is occupied more with the best means of eliminating an infection surgically, than with the means of obtaining a specific destruction of the infecting agents.

In this connection, however, work which has been carried on by Wright, of London, for some months past, and is still being carried on, would seem to merit inspection from the standpoint of the surgeon.

Wright, through his reported studies, has added new importance to the *rôle* of the leucocytes in recovery from infections, and has been able, in a sense, to place their activity on a mathematical basis. His first important observation in this regard was to the effect that the serum of an animal contains a substance which makes phagocytosis possible, and without which it could not occur, or could occur only on a minimal scale. To this substance he gave the name of *opsonin*, meaning to cater to, or to prepare food for. *Opsonin* can be recognized only through its function of increasing phagocytosis, and it may be demonstrated as follows: Tube A contains the fresh defibrinated blood of some animal, and, of course, the leucocytes and serum normally present in the blood. Tube B contains a suspension of staphylococci in salt solution. If one mixes the blood and cocci, and places the mixture in the thermostat for twenty minutes, and at the end of this time makes stained preparations of the mixture, the number of cocci which each leucocyte has taken up may be counted readily. This experiment merely shows that phagocytosis takes place in the test-tube. Let tube C contain fresh defibrinated blood from which all the serum has been removed by repeated centrifugation and washing with salt solution. Mix the contents of tube C with a suspension of staphylococci, and, after incubating and staining as before, it is found that little or no phagocytosis has taken place.

This experiment indicates that the serum is of importance for phagocytosis, but does not decide whether the influence is exerted on the leucocytes or on the cocci. To decide this point the cocci may be treated with some of the animal's serum for a short time, the serum being eventually removed by washing with salt solution, after which the treated cocci may be mixed with serum-free leucocytes. After incubation and staining, it is found that the treated cocci are taken up by the leucocytes to almost the same degree as in the first experiment. It is, then, well established that the opsonins aid phagocytosis by some action on the organisms, rather than on the leucocytes. The facts are essentially the same in relation to a large number of bacteria.

The opsonins spoken of above are normal opsonins, of which every serum probably contains a variety suitable to one or another micro-organism.

A second important discovery by Wright was that the quantity of opsonin undergoes an increase when an animal is suitably immunized with a bacterium or some one of its constituents. This is a discovery by Wright only in so far as it concerns opsonins, for it had previously been noted by a number of observers that an immune serum in some way causes an increase in phagocytosis; Wright fastened the property on a particular "substance."

In order to determine an increase in the opsonins, some method of measurement had to be devised. This is met by the so-called *opsonic index*. For example, one has in hand the washed leucocytes of man, and, in addition, serum from a normal man, and serum from one who has been immunized with the staphylococcus. The average number of cocci taken up by the leucocytes in the presence of the normal serum is set down as the denominator of a fraction, and the average number taken up in the presence of the serum to be tested is taken as the numerator. If the fraction reads $\frac{1}{1}$, the opsonic index of the immune serum is normal, or 1. If it reads $\frac{1}{8}^{6}$, the index is 2; that is, the opsonic power is twice that of the normal serum.

It is necessary to speak of the foregoing theoretical points in order that its practical application may be clear.

The important practical part of Wright's work has to do with the fact that immunization with some organisms, probably many, actually does cause an increase in the quantity of opsonins, and this has been worked out most clearly in relation to the stapylococcus and the tubercle bacillus. Wright has undertaken the treatment of minor staphylococcus infections, as acne, furunculosis, and sycosis barbæ, by guarded immunization with killed cultures of the organism, and the results were in no small degree encouraging. The result is an increase in the quantity of opsonins, and this, at least in many instances, goes hand in hand with an improvement in the condition of the patient or with actual recovery.

In a similar manner it has been found that immunization with one of the tuberculins causes an increase in the opsonins for the tubercle bacillus, and Wright[1] has recently published an article dealing in detail with the principles involved in the vaccination treatment of tuberculous infections.

The essential point to be kept in mind is, so to manage the immunization that the quantity of opsonins undergoes a gradual increase. In this connection, Wright recognizes two phases of the vaccination reaction. The first is spoken of as the negative phase, and has reference to a slight decrease in the opsonins, which immediately follows vaccination. This, of course, can be determined only by collecting some of the patient's serum and testing its opsonic power, as described above. If too large a dose of vaccine is given, the negative phase is exaggerated and prolonged; hence, a dose should be selected which causes the minimal negative phase, or which causes none at all. This can be determined only by trial. Following the negative phase, which may last from one to several days, the opsonins gradually begin to increase, and this stage is spoken of as the positive phase. It should be the aim throughout the immunization to obtain as short a negative phase, and as early a positive phase, as possible. Hence, in the treatment of a case, frequent tests of the serum are necessary, in order that the operator be thoroughly posted as to the conditions.

The question arises as to whether the somewhat favorable results of Wright justify the application of his methods in the treatment of certain resistant surgical inflections, such as chronic staphylococcus osteomyelitis, and incipient or inoperable tuberculosis of the joints

[1] *Lancet*, 1905, ii. 1508.

or internal organs. It is probable that one is not justified in offering a positive opinion on this point at the present time, yet from a knowledge of the general principles and the results so far obtained, there is some ground to hope that the method of active immunization may aid the surgeon in the treatment of some infections for which serums have proved of no distinct value.

The articles of Wright should be referred to for the details of his methods.

HOWARD T. RICKETTS, M. D.

A PLEA FOR CONSERVATISM IN GASTROENTEROSTOMY

There has been such an appalling increase in the number of gastroenterostomies during the past few years, that in the mad rush not infrequently the conservative indications for such a procedure have been forgotten. The improved technique has rendered such an operation simple and relatively innocuous.

Definite indications and contraindications still remain for gastroenterostomy, and it would hardly seem necessary to restate and emphasize them. That the natural passage of food from the stomach to the bowel via the pylorus should be, if possible, maintained, must be granted by one with even an elementary knowledge of the physiology of digestion. The pyloric ring, which reflexly is either flaccid and patent, or spastic and closed, plays a definite *rôle* by keeping the various foods within the acid medium of the stomach until such changes have occurred as render them ready for further elaboration in the alkaline medium of the bowel. An interference with these natural chemical phenomena is not well tolerated, and surely should not be enforced, unless absolutely necessary.

Enough experimental and clinical evidence has now been brought forth to demonstrate the liability and danger of the formation of an ulcer in the loop of the bowel which has been anastomosed to the stomach. Kocher thinks this is due to the acid gastric juice, which strikes the bowel unaccustomed to such an insult, and stimulates it to circular contractions. Thus a cul-de-sac is formed, in which, owing to the prolonged contact of the acid gastric juice with the mucous membrane, ulceration occurs.

A more recent and thorough study of the mechanics of gastroenterostomy has shown that as long as the pylorus remains patent, food continues to pass, by preference, through it, no matter how wide or how perfect the gastroenterostomy opening may be. This is due to the anatomical arrangement of the muscles of the stomach, and is further influenced by the intra-abdominal pressure, which more than equalizes the action of gravity.

In the numerous cases of gastroenterostomy for ulcer, it was seldom that the ulcers could be excised, for they are frequently multiple, and when single, are usually so firmly adherent to surrounding structures, that their removal would be dangerous, if not impossible. Likewise in hemorrhage, the bleeding point, or points, can seldom be found, and the operators content themselves with a gastroenterostomy.

The surgeon is not justified in operating upon cases of acute ulcer, unless perforation is imminent or has occurred. There is some question whether or not chronic ulcers demand surgical interference, unless there are repeated small hemorrhages which menace the life of the individual, or unless they produce, by stricture or adhesions, mechanical obstructions. The so-called cases of atony of the stomach, and those that mask under the name of chronic dyspepsia, are not infrequently part of a general neurosis, and demand proper medical attention.

Still, the operation of gastroenterostomy will always remain, and in the light of our present

knowledge should be advised in all cases where the natural evacuation of the contents of the stomach is impossible and pyloroplasty is not feasible. This includes the large group of cases with mechanical obstruction, due to pyloric stenosis, and malformations of the stomach, due to hour-glass contractions or perigastric adhesions.

M. Milton Portis, M. D.

TRANSACTIONS OF SOCIETIES

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY

Stated meeting, January 19, 1906.

The President, DR. FRANK T. ANDREWS, in the chair.

OMPHALOPAGUS

DR. JOSEPH B. DE LEE: Mr. President, I have here a very interesting specimen, not because of its clinical importance, but because of its rarity. It is a typical specimen of double monster — an omphalopagus — twins united at the abdomen from the xiphoid to the pubes. Through the kindness of Dr. H. H. Whitten of Peoria, I am enabled to exhibit it. The specimen is for the Northwestern University Medical School Museum. The woman aborted. We know that monstrosities very often lead to abortions.

RUPTURED EXTRAUTERINE PREGNANCY

DR. RICHARD R. SMITH of Grand Rapids, Michigan: Here is a specimen I expected to show in connection with Dr. Watkins's paper, which has been postponed. The specimen, together with the history of the case, brings up a question of some clinical importance. It is a ruptured extra-uterine pregnancy, the fœtus having lived to about the end of the third month. The history of the case, in brief, is this:

The woman had her last regular menstruation September 18th, last. On October 8th she had some nausea, which lasted for several days. On October 22d there was some flow, which continued for a week or so, and was dark and scant. On November 3d she had a slight chill while at work, and some cramp-like pains in the lower abdomen. On November 8th she began flowing again, and this continued almost constantly until December 5th. On November 13th she had an attack of syncope, attended with great pain in the lower abdomen, and I am told that she was pulseless at this time. In all, she had several slight and three hard attacks of this kind, the last one December 13th. She has been in bed constantly since the last attack, and has complained of a great deal of soreness in the lower abdomen, distention at times, and occasional vomiting.

I saw her first January 2d, examined her, made a diagnosis of extrauterine pregnancy, and advised immediate operation.

The question was asked, "Is the fœtus dead?" I answered that in all probability it was, and even though it were not, its chances of living were extremely slight, and that operation should be done at once. The woman was a Catholic, and, as you may know, the Catholics forbid operation in instances of extrauterine pregnancy before the sixth month in case there is any chance of the fœtus being alive. I explained to her and the priest the dangers to the mother of delay; pointed out the fact that with such a history the fœtus was in all probability dead; that in the possible case of its being alive, the chances of bringing the case to a successful termination by operation would constantly decrease. Without my absolute assurance that the fœtus was dead, they refused operation.

Could one state with absolute certainty that the death of the fœtus had taken place? The cessation of flowing and of acute attacks of syncope and pain both pointed in this direction. We know, however, when tubal rupture or abortion takes place, that the fœtus may continue to live and grow. In this case the fœtus evidently lived to the end of the third month, even after a number of severe attacks signifying hemorrhage. There was a distinct souffle to be heard over the symphysis on the right side up to the time of operation. The temperature and pulse remained about normal. I watched the case for ten days. During this time, there was no increase in the size of the mass at a time when we should expect a decided increase, were the fœtus alive. This enabled us to state positively that the fœtus was dead.

Fortunately, the delay in operation did not prove serious. We removed the ruptured tube, together with the decidua and three months' fœtus, on January 15th, and the woman is doing well.

DECIDUAL CAST

DR. FRANK A. STAHL: I brought this specimen with the intention of exhibiting it in connection with Dr. Watkins's case of decidua in tubal pregnancy, but since Dr. Watkins is not going to present his case this evening, I will call attention briefly to this specimen, which is a perfect decidual cast, plus the little gestation-sac, which is still in position. It is of about the fifth-week development.

In my studies in these matters, I have come across what I have termed the crescentic-shaped nucleated red-blood corpuccle, which I think is a new discovery. It is a transitional form of the nucleated red-blood corpuscle; from the nucleated blood corpuscle to the mature non-nucleated corpuscle. I got the crescentic form of the nucleated red-blood corpuscle in a specimen like this.

It is a very delicate specimen. If any of you are particularly interested in this subject, I shall be glad to demonstrate the specimen, since we have not a vessel here which will enable me to float it and demonstrate it as I should like to do at the present time. There is a perfect embryo, and a perfect umbilical vesicle. I have had in mind the idea of sending it to Professor Minot to see if he could not substantiate the crescentic shape of the nucleated blood corpuscle. The crescentic from is the next step to the mulberry form of nucleated blood corpuscle. This mulberry form of the nucleated red-blood corpuscle is also but a transitory metamorphotic form in the metamorphosis of the nucleated red-blood corpuscle; from the nucleated red-blood corpuscle of embryonal period to the mature or non-nucleated red-blood corpuscle of later development.

DISCUSSION ON DR. SMITH'S CASE.

DR. CHARLES B. REED: I was very much interested in the remarks of Dr. Smith in regard to the attitude which the Catholic Church takes in relation to the destruction of the embryo, extrauterine.

During a discussion in the symposium on abortion before the Chicago Medical Society, November 23, 1904, there was an address by Father O'Callaghan of the Order of Paulists. Father O'Callaghan said that the attitude of the Church was definitely laid down and decided for all time. He said:

"In the face of a sentiment which has persuaded a large section of the medical profession that direct abortion is sometimes not only justifiable, but even commendable, that Church has unflinchingly declared that the direct taking of an innocent human life is *always* murder, no matter what be the stage of its existence.

"In 1884 her authoritative teaching body was asked whether it was safe to teach in the Catholic schools that the operation of craniotomy is sometimes justifiable. The answer was that it was not safe so to teach.

"In 1889 the same body was asked if any operation at all looking to the direct killing of the child in utero was justifiable. This question was also answered in the negative.

"Again, it was asked if this should be done when absolutely necessary to save the mother, and in 1895 this question was answered in the negative

"Again, the formal question was asked, if in extrauterine pregnancy any operation be justifiable which meant the death of the child. This question was also answered in the negative. If one or the other must die, or both die, and if both die without act of ours, responsibility is not ours.

"Such is the position of the Catholic Church."

That such a position can be for a moment assumed and maintained by any body of men in the present state of our knowledge is not creditable, either to their intelligence or their humanity, and can only result in the loss of many valuable lives in the future, as it doubtless has done in the past.

If we consider two human beings caught in the current of the Niagara rapids, one in mid-stream and one near the shore, sweeping swiftly to destruction, while a man near at hand, with rope and life-preserver, stood idly by and refused to aid the accessible victim because both could not be saved, we shall have a parallel case.

The Catholic physician is placed in a very unfortunate dilemma; he must either stultify himself in the eyes of his professional and scientific associates, and insult his conscience and moral nature by refusing to operate in extrauterine pregnancy, or else he must disobey the dictum of the Church and thereby imperil his immortal soul.

This attitude is indefensible on rational, scientific, and truly religious grounds; the principle is archaic and the practice murderous.

ABDOMINAL CÆSAREAN SECTION

DR. JOSEPH B. DE LEE: The three cases which I wish to report to-night present certain points of interest, mainly clinical.

The first is one of abdominal Cæsarean section in which the diagnosis of a large child and a slightly contracted pelvis was made, and the indication for operation was a subjective or personal one, terms with which some of the members of the society are familiar as coming from me; meaning by that that the sizing up and judging of the case give the indication to the individual operator, whereas the measurements and other features of the case may not appear to have indicated the operation.

Mrs. H. was referred to me by Dr. A. V. Cole of this city. She was born in Chicago, was sickly in infancy, and her menses were late in appearing. They appeared first in the sixteenth year, and were irregular. This point is mentioned, in view of the nature of her pelvis. The first labor was at full term. She had two physicians at this labor, who

both applied forceps and had great difficulty in delivering the child, and produced an almost complete laceration. She had sepsis, and suffered for eight weeks from abscesses in the pelvis. The second delivery was accomplished by Dr. Cole, and was also difficult. She was ten hours in labor, and he had to terminate it by a craniotomy after having unsuccessfully tried forceps. At this time the woman had no fever, but a rapid recovery. The patient was at full term. She says that she had a large baby, and Dr. Cole said the baby weighed 7¾ pounds.

Her last period before the present pregnancy was October 8, 1904. The patient was brought to me at the ninth month of pregnancy. I examined her and found the measurements as follows: Spines, 25; crests, 28; trochanters, 31; Baudelocque, 20; conjugate diagonalis, 11½; and bi-ischiatic, 9. The woman was of stocky build, had a rather square head, and the bones were very strong. She went into labor July 29th, which was about ten days over the expected end of pregnancy. Examination was immediately made under chloroform. The whole hand was inserted into the vagina, and the pelvis measured in that fashion. It was a small pelvis, and small around. The sides were close together; the shape of the pelvis was circular; the bones were heavy, and the pubis dipped into the pelvis at the top. I measured the pelvis carefully with the whole hand, and decided it was generally contracted to a considerable degree. The bispinous diameter, taken by the intrapelvimeter, was 11 centimeters exactly; the baby was estimated to weigh ten pounds. The baby presented by the breech; the head was palpable through the abdomen. The shape of the baby's head, I decided, was flat and broad. The woman was a Bohemian.

After carefully balancing in my mind the shape and size of the pelvis, the shape, size, and hardness of the baby, the fœtal head particularly, I decided that it would be to the best interests of both to deliver abdominally. Accordingly, Cæsarean section was performed. The incision was made smaller than usual, intending not to deliver the uterus, as had been my custom in my previous eleven Cæsarean sections. I thought this time I would not deliver the uterus, but do Cæsarean section without that. The omentum was adherent over the uterus; the relic of the previous inflammation, the sepsis. The child presented by the breech, and I delivered it from below, not by the head, and had to do Van Horn's method, reversed, through the abdomen. It was difficult, requiring three minutes to deliver the child. The uterus was sewed in three layers. A profuse hemorrahage was controlled with great difficulty. The omentum, which had several holes in it, was sewed with catgut; the belly was sewed with three layers of catgut. There was one row of interrupted catgut sutures put in the uterus. The boy weighed 9¾ pounds. The head was hard, and of the shape we expected before delivery. A transverse section of the child's head was like this (indicating on blackboard), an ideal head to go through in a breech presentation, because the long segment of the head would have gone before, but a bad shape for the foregoing head. The face was a transverse ellipse.

The measurements of the head were, bitemporal, 9½ cm., biparietal, 10¾ cm., and that biparietal diameter had to go through a conjugata vera of 9¾ cm., since the diagonalis was 11½ cm. There would have been a disproportion of 1 cm. The other measurements were as follows: Suboccipitobregmatic, 11; occipitofrontal, 12; occipitomental, 13; bisacromial, 14; bisiliac, 10; circumferences, first, 38 cm.; second, 39 cm. The child's head was very hard, the bones well ossified.

The mother rallied well, and while she ran a temperature of 100° to 102° for three days, there was nothing done for the fever, and she made an excellent recovery.

VAGINAL CÆSAREAN SECTION

The second case is that of a woman who had eclampsia, and while, unfortunately, we could get no autopsy, I believe the case was one of acute yellow atrophy of the liver. That is a mere suspicion on my part, but, still, the clinical history points in that direction.

Mrs. V. was sent to Wesley Hospital from South Chicago. She was about 26 years old; primipara; Protestant. The mother of the patient had eclampsia in her first labor, but was subsequently delivered of four children without any eclampsia. This patient had headache, vomiting, and œdema of the legs for three or four weeks before the convulsions appeared. The convulsions began on Friday, two days before her entry to the hospital. She had four convulsions on Friday, after which they ceased, but began again Sunday, and ceased again Sunday, and Sunday evening at twelve o'clock she entered the hospital. She was conscious Monday morning, but very excitable. When I saw her she was in a general state of nervous and motor irritability, so that the least touch would make her jerk. Her mind was clear, and while she complained of some headache, still, apparently, the worst storm had been weathered. The urine was loaded with albumin, with all kinds of casts, and it showed a percentage of urea of 3.3. She passed fifteen

ounces of urine. She was put upon a water diet. Chloral was given every four hours, and salt solution was administered per rectum. Cathartics were also given. On Tuesday she was much better, her pulse and temperature were normal, although the pulse was of high tension. The amount of urine passed increased to twenty-four ounces. The albumin decreased in amount, and the casts were fewer in number, although still plentiful. However, a slight icteric tinge of the skin was shown, while her general condition was better. This was Tuesday. Wednesday she passed about the same or possibly an increased amount of urine, her general condition being satisfactory. The heart tones of the baby were strong and regular. The woman was then six and a half months pregnant. We decided it was one of those cases of pregnancy eclampsia in which the woman was going to term. I have had two such cases. Thursday night, however, she had slight convulsive twitchings. She complained of severe headaches, but there was no actual convulsion. So I ordered her prepared for delivery Friday morning, early. Examination showed a long cervix, fully one and a half joints long, but it admitted the finger up to the internal os, and I could pass the tip of the finger into the internal os. While the cervix was not hard, yet it could not be called a soft, relaxed cervix. The convulsive twitchings had kept up during the night, so that chloroform was administered at intervals. I mention this point in view of what happened later. Thinking that the quickest and least harmful way to deliver her would be a vaginal Cæsarean section, this operation was performed, and I succeeded without any difficulty in delivering the woman. From the time the woman left the ward and was returned to bed, it was about an hour and a half. This included all preparations and the carting of her to and fro. She woke up from the operation clear in mind, and was quieter. There was no temperature, no complications in connection with the operation, and she took the anæsthetic well. The anæsthetic was chloroform. The patient was delirious the following night, that is, twenty-four hours after the operation. She was not only delirious, but cried out, and was restless. That is what first gave me the suspicion that something was out of the usual. Stupor began thirty hours after delivery, and coma. At this time the patient was distinctly icteric, and the tears were icteric, the conjunctiva was icteric, and the discharges from the genitals became a light yellow serum. Slight cyanosis was visible. The lungs were clear. I examined the liver dullness, and found it decidedly diminished. The patient died the following morning, thirty-eight or forty hours after operation, in deep coma. No autopsy was allowed. The diagnosis of yellow atrophy of the liver was made, with several question-marks.

CASE OF ANOMALOUS ECLAMPSIA

The next case is one of anomalous eclampsia. Mrs. C. was sent to me by Dr. Henry E. Tuley of Louisville. This woman comes from a neurotic family, and there is a suspicion, although I could not get a direct history for certain reasons, of epilepsy on the father's and mother's sides. This was delicately hidden. She has always been nervous and subject to headaches. The patient was sent with a note saying that Dr. Tuley had treated her for toxæmia of early pregnancy, attended with vomiting, headaches, etc., but, under dieting and the use of various remedies, the nature of which I do not know, the symptoms disappeared. The woman at various times, while under my care, presented toxæmic symptoms, but by following the diet which I gave her, a non-albuminoid diet, the only albuminoid being milk and milk products, she got along very well. When she was in the fifth month of pregnancy, I examined her with rubber gloves, and a peculiarity was that a simple examination brought on a hemorrhage, which was so profuse that I had to tampon the vagina temporarily and then send her home in a cab. The hemorrhage ceased after a few days' rest in bed, and nothing further was noted. I might say here, in view of the hemorrhage, and thinking possibly I might have to do with a hæmophilic, I gave her fifteen-grain doses of calcium chloride. This woman went into labor on December 23d; she had a rather slow labor, but a normal one. Examinations of the urine showed no albumin, no sugar, normal specific gravity, and no casts. There was only one examination for casts made, and none was found. On inquiry, I was told that the total amount of urine passed in twenty-four hours was satisfactory. I asked the women, if she passed less than forty-five ounces of urine a day, to let me know. Delivery was normal, but a little slow. There was no laceration of the perineum. There was a slight laceration of the fourchette, for the closure of which three or four catgut sutures were used. After delivery, the patient flowed very little, and during the first stage the blood clotted rapidly. Attention was drawn to the fact that the blood clotted so quickly and firmly, and I ascribed this rapid and firm clotting of the blood to the use of the calcium chloride, but something else was the cause of it. During the twelve hours after labor the woman complained of headache and extreme nervousness — excitability. There was extreme motor restlessness. About eight in the evening,

while the patient was talking with her husband, he suddenly noticed she was getting a little forgetful and absent-minded. She began to twitch, although she was conscious. The twitchings then became general, after which she lost consciousness, and had a typical eclamptic attack, with deep cyanosis, coma, and tonic spasm. She bit her tongue, and as there was no one there at the time, save her husband, the jaw was set when the nurse arrived. She recovered consciousness in twenty minutes. I arrived about an hour after the first convulsion. She was then fully conscious; pulse 128 to 140, of high arterial tension; temperature 99.6°. The patient was very pale, and told me about the convulsion. She said she had a terrific headache, after which she began to twitch, but had no control over the twitchings, and she did not know what had happened until she woke up and her tongue was very sore. She had passed only fifteen ounces of urine since the delivery. I gave her citrate of magnesia and a quarter-grain of morphia. She went to sleep, and later awoke, apparently apprehensive, and then began to twitch in my presence. The twitchings simulated clearly eclamptic convulsions. I asked her to stop the twitchings, and she shook her head — no. Then she lost consciousness and had a typical eclamptic convulsion. Naturally, you think, and I thought, this woman was having hysterical convulsions. But if I ever saw an eclamptic convulsion, that was one, and after having seen fifty-two cases of eclampsia, my opinion should be entitled to some consideration. Coma lasted ten minutes. She slept soundly for ten minutes, at the end of which time she was clear in mind. After two and a half hours, another convulsion occurred, and about this time I decided on a course of treatment. I gave veratrum and morphine. The pulse was 128 to 140, high and full, not as full as when I first came. She had the fourth convulsion at two A. M. Veratrum was given in pretty good doses, shortly after which the pulse went down to 80, and even once to 76. Morphine put the patient to sleep for four hours, and after that, when she awoke, her mind was clear, and there were no other evidences of convulsions or of motor excitability. I catheterized her after the fourth convulsion, and examined the urine myself with the hot and cold nitric-acid test, carried out carefully. I did that twice myself, in a good light. There was the tiniest trace of albumin and a tiny trace of sugar, with the Whitney test. There was some clearing up of the color reagent, with the addition of one half of the amount of urine. The specific gravity was 1020, and the urine was strongly acid.

The woman has made a good recovery. About the tenth day of her puerperium, because her husband had disappointed her, she became excited and very nervous, but she had nothing in the nature of an eclamptic attack.

In regard to the last case, it is possible that it is one of what the older authors used to call eclampsia reflectorica, a reflex eclampsia.

In my own experience I have divided eclamptics into four classes: 1. Reflex eclampsias; 2. Toxæmic eclampsias; 3. Those attended with fever, and probably they carry out the idea of the French, of the hepatotoxæmias — those eclamptics which are really due to uræmia and nephritis; and 4. Those eclamptics that are of hepatic origin similar to acute yellow atrophy of the liver. That is the clinical division. I often put the various eclamptics I have observed under one of those four heads.

In regard to the second case, I suspect that it might have been an acute yellow atrophy of the liver. I wanted the urine examined for leucine and tyrosine, but it was not done. If we found leucine and tyrosine, the findings may not have pointed indubitably to yellow atrophy of the liver, but would have helped a great deal in making the diagnosis.

DISCUSSION ON DR. DE LEE'S CASES

DR. GUSTAV KOLISCHER: Considering the first case reported by Dr. De Lee, I admit that the indications for Cæsarean section are more or less subjective, unless we have to deal with an absolute indication. But I think the points which Dr. De Lee brought forth as supporting this procedure do not correspond with what we usually consider as the indication for this operation. For instance, it is absolutely impossible to decide whether the fœtal head is going to pass through the pelvis or not, in the way De Lee suggested. The formation of a floating head does not mean anything for the further progress of labor, because the head moulds after it is forced down in the pelvis, and often a very large fœtal head can pass through a rather small pelvis by the overlapping of the bones. So I cannot see how, with any probability, a man can judge from the size or from the formation of the floating head whether it is going to pass through the pelvis or not.

I cannot agree with Dr. De Lee that the pelvis he described was generally contracted. It has not the characteristics of a generally contracted pelvis. Judging from the measurements he took, there was only a difference of a centimeter and a half, and it would seem that such a head would have come through the pelvis if it had had a chance to be molded into the pelvis.

So far as hemorrhage in connection with Cæsa-

rean section is concerned, I think it would be a good thing to adopt the suggestion made and adopted at two or three of the European clinics, to administer ergot about twenty minutes before the operation, as by this time the ergot will have acted and contraction of the uterus secured.

So far as the two case of eclampsia are concerned which Dr. De Lee reports, I would like to say this about the second case: This case impressed me as one of prolonged uræmic attack. If we consider the fact that the urine was very scanty, that we had to deal with a case of nephritis, the urine being loaded with albumin and casts. The woman did not have any temperature. It is the general consensus of opinion of almost all clinicians and pathologists, that there is no eclampsia without fever, without rise of temperature, and often a considerable temperature. The only way of discriminating between an epileptic attack, uræmic attack, hysterical attack. and eclamptic convulsions, is the presence of temperature. There is no way by which the most experienced neurologist can give us any leading symptoms which will enable us to characterize convulsions as eclamptic. There is no such thing as a typical, classic eclamptic convulsion. This was undoubtedly a uræmic attack.

The second case of eclampsia he reported was undoubtedly one of hystero-epilepsy. There was no temperature. The woman felt the attack coming on, which is characteristic of hystero-epileptic attacks. Usually, the woman is not conscious in an eclamptic attack, but she may be in cases of hystero-epilepsy, with all its characteristics. There is hardly a post-mortem examination which does not tend to show necrotic foci in all the parenchymatous organs, explaining why there is irritation of the centers that regulate temperature, and which will lead to a rise in temperature. Furthermore, it is generally accepted that there is no connection between eclampsia and nephritis. There are many cases on record of nephritis unaccompanied by eclamptic attacks. Convulsions, lost consciousness, temperature, without a trace of change in the kidney, not even what we call the big kidney of pregnancy.

The classification which Dr. De Lee offered of eclampsias, namely, eclampsia reflectorica, and eclampsias that are due to other causes in connection with temperature, is not based on a clinical or pathological foundation. I cannot see how any one can prove that there exists reflectoric eclampsia, if the attacks that he refers to are not eclamptic. How is a man going to prove that the case is one of eclampsia, by saying that it is a typical eclamptic attack? Such a thing does not exist. We can only talk of eclampsia either by the clinical symptoms of it, and the leading symptom is temperature; or if we do not know anything about the clinical history, the post-mortem examination must show the changes first described by Schmorl.

DR. CHARLES S. BACON: In the case of suprapubic Cæsarean section, Dr. De Lee stated that the omentum was adherent to the uterus. He did not describe how he dealt with that, whether he separated the omentum or cut through it. I would like to know how that was managed.

In regard to the last case, I also got the impression that it was a case of hysterical convulsions, for substantially the same reason that Dr. Kolischer has given.

These anomalous cases are certainly very interesting, and are deserving of more study than has been given them in the past.

In regard to the first case of eclampsia, the last speaker has made some statements, positively, that seem a little in advance of the information that most of us possess at present, especially when he says that eclampsia, if I understood him correctly, has nothing to do with the kidney. As long as the lesions of the kidney are found so frequently in all post-mortem examinations of eclamptics, as long as the other findings are not universal, it seems to me we can hardly call the kidney lesions immaterial in eclampsia. I would certainly be inclined to doubt whether we can class this case among the uræmic convulsions, in contradistinction to eclamptic convulsions. It somewhat agrees with a case I reported last year, where the convulsions were quite anomalous.

DR. CHARLES B. REED: We at present believe quite definitely that eclampsia or an eclamptic attack i due to the toxæmia of pregnancy, and it seems to me that it is unwi e to attempt o classify the attacks according to the organ which is most seriously affected by that toxæmia. It occurs to me it would be just as reasonable to speak of tuberculosis of the lung, of the pleura and bronchial tubes, by separate names as it would be to classify the toxæmia of pregnancy which shows itself in eclampsia by the name of the organ, be it the kidney, the liver, the spleen, or any other organ which is most generally affected by that toxæmia, which is admitted at present to be the case in eclampsia.

DR. CHARLES S. BACON: There is one observation I want to make. In the examination of the urine in these cases, nothing was said about the determination of the relation between the amount of ammonia and total nitrogen output, or the ammonia coefficient, to which Williams has ca led attention as possibly being of some importance. I would like to know if that examination was made.

DR. GUSTAV KOLISCHER: I do not think I said, in my previous remarks, that the changes in the kidneys in cases of eclampsia are immaterial. But we can say this: We know that it is an unnecessary premise in cases of eclampsia for kidney change to occur; consequently we cannot say that eclampsia is due to a change or changes in the kidney . In many cases there are no changes in the kidneys, and yet patients have eclampsia.

So far as looking fo ammonia is concerned in these cases, that chapter is closed by the researches of Ludwig, who tried to prove that eclampsia is due to an intoxication by carbamides, but his contention was refuted some time ago.

DR. RACHELLE S. YARROS: I wish to report a case very briefly, in order to emphasize one point which Dr. De Lee made in connection with these cases of Cæsar an section. "The indication for Cæsarean section must frequently be l ft to the judgment of the individual operator." It seems to me a very important point, and it might also apply to other obstetrical operations. The value of the importance of the pelvic measurements as an indicator for this or that obstetrical operation might be overestimated, and other things not taken into consideration sufficiently.

My patient was an Assyrian, primipara, 23 years old, with a distinct history and evidences of rickets. The pelvis was that of a very moderately generally contracted one. After she had been in labor for twenty hours, with very severe uterine contractions, on examination the cervix was found not entirely effaced as yet, and dilatation the size of a quarter. The head was above the brim of the pelvis, right occipito-posterior position. A quarter of a grain of morphine was given to the patient, and she had some rest during the night, although the pains continued at intervals of two minutes, but not as severe as they had been during the previous hours. At the end of forty hours, Dr. Bacon examined the patient with me, and we found very little change. At no time were we absolutely sure that the baby was actually alive. The Doctor favored further waiting, hoping that the head would finally engage. At the end of forty-eight hours the patient began to show distinct signs of exhaustion, and when the membranes ruptured, two of the assistants heard the fœtal heart sounds. Dr. Bacon and I decided to terminate the labor, in view of the mother's condition. Since dilatation was only half complete, we incised the anterior and posterior lips of the cervix, and applied axis-traction forceps. Even with more force than is strictly speaking obstetrically permissible, nothing was accomplished. The head was then perforated, but for some reason the craniоclast would not hold, and finally it was necessary to do version, on account of the extreme condition in which the patient was, so as to hasten the delivery, but even the perforated aftercoming head was extracted with great difficulty.

It seems to me that, under similar circumstances —that is, with the patient in actual labor for forty-eight hours, with the head remaining unengaged, the child in good condition—one would be justified in inferring that the pelvis must be worse than the measurements would indicate, and favor Cæsarean section or symphyseotomy. And yet, should I have reported a similar case before your Society, at least one of your members would have condemned me severely.

DR. J. CLARENCE WEBSTER: I think the subject of the indications for Cæsarean section is still one to be developed. We have had differences of opinion expressed in this society on various occasions when the subject has been brought forward. We have a great deal to learn in this matter, particularly in reference to the relative indications. Probably we shall never arrive at a common opinion regarding them, the various courses adopted by different men being largely a matter of temperament and experience. I believe that men of good judgment and experience will, in the future, increase the number of relative indications. I should like to refer to my experiences in the last two months.

During this period I have performed four Cæsarean sections, one abdominal and three vaginal.

The abdominal case — the first one — is interesting, and may elicit some discussion. It was the case of a primipara who was admitted to the Presbyterian Hospital for delivery, with œdema, scanty urine, albuminuria, and casts. She was placed on treatment for several days and did not improve. The œdema steadily increased. She went into labor one evening, and the membranes ruptured very soon afterward. Her general condition was fairly good. I did not see her until the next morning, and when I arrived at the hospital there was an extreme degree of œdema of the lower extremities, the lower abdominal wall, vulva, and vagina. The cervix was very high, scarcely to be reached, and the os admitting only one finger. The uterus was retracted on the fœtus, and the vagina with difficulty admitted three fingers, on account of the extreme œdema. I had never seen such extreme œdema in a woman before. I should state that the pelvis was justo-minor, slightly flat. I do not remember the measurements. The head was above the pelvic brim.

I considered the case carefully, and decided that I would perform abdominal section, on account of the great narrowing of the vagina and the extremely

high position of the cervix. The section was carried out without any difficulty. A living child was obtained, and the mother made a perfectly good recovery, the œdema rapidly disappearing. The vaginal sections were also interesting. One was a case which I had seen in consultation with Dr. Billings. There was an extremely bad mitral stenosis, with regurgitation. The woman was small, and pregnant for the first time. She was carried along by treatment to the middle of the last month of gestation, and then slight symptoms of heart failure began to develop, and I decided to adopt a measure which I had never adopted previously in such a condition. Knowing the extreme mortality in case of mitral stenosis, I decided to deliver this woman by a vaginal Cæsarean section, carrying out the entire procedure under anæsthesia, with free administration of nitrite of amyl. The operation did not last more than three quarters of an hour. The child was delivered very easily by forceps after the section was made. The mother and child were both saved. The mother made a very simple and easy recovery.

The next case was one of acute pyelonephritis, with distention of the right kidney. The symptoms developed at the end of pregnancy in a woman who had never had a child, but who had submitted to criminal abortion twice. Delivery in this case seemed to be indicated, on account of the increasing condition of the acute pyelonephritis with involvement of the parenchymatous portion of the kidney, producing ca ts. The patient was delivered by vaginal Cæsarean section, and the child was lost. It was a breech case, and the delivery was difficult, particularly as regards the fœtal head. I had to apply forceps to the aftercoming head, but the pressure on the cord had been too extended, and while the child was lost, the mother made a good recovery.

The other case was a woman who had been in labor three days before her admission to the hospital, with an apparently rigid cervix. When she was admitted, the cervix would not admit more than the finger-tip, and there was a clear history of three days' labor. It was evident that labor should be terminated, and I chose vaginal Cæsarean section. The child was extracted with forceps. Both child and mother are alive.

I am very much interested in vaginal Cæsarean section. I think it is an operation of great value, although it must be used with great care. It does not come into consideration in cases of contracted pelvis, as does abdominal section, but in other conditions I think it must be put on a footing of equality with the various methods of rapid delivery which we now employ. I believe that in the hands of experienced operators it is an operation which is not attended with very much danger from hemorrhage or from rupture. I have done this operation six times, and in not a single case has the uterus been torn outside of the incision made by the scissors. This cannot be said of the rapid methods of manual dilatation and delivery that are generally in vogue. I can understand, however, that if the cases are not properly selected, the operation will be attended with serious complications. For instance, if it be selected in a case in which the cervix is high in the pelvis, the separation and stripping up of the bladder and splitting of the uterus will undoubtedly be accompanied with considerable hemorrhage; also, if the vagina be unduly narrow, the operation will be complicated.

One point I should like to emphasize with regard to these cases is this, that there should be, before the operation is carried out in a primiparous woman, careful manual dilatation of the vagina. This will certainly expedite the delivery of the fœtus afterwards.

Dr. Norman Kerr: I would like to ask why, in the two cases mentioned, where the disproportion was not very great between the head of he child and pelvic outlet, symphyseotomy was not considered and carried out.

The great advantage, to my mind, in the performance of this operation is the fact that it enables the woman to deliver the child spontaneously afterwards. I understand that these were both young women. The operation of symphyseotomy can be carried out safely and effectually by the method of Dr. Harris. I had the pleasure of seeing Dr. Harris's first case, and Dr. Manierre took care of her through one pregnancy since, and I have taken care of her in three pregnancies. That woman did not have a very narrow pelvis, but she had a large child. I am speaking, of course, of thos cases of contraction of the pelvis of slight degree, where a little more room will enable the child to be delivered by forceps or spontaneously; and they can deliver their other children spontaneously as after symphyseotomy will secure permanent pelvic enlargement.

Dr. Gustav Kolischer: I think the discussion has swerved a little from the main points. It is unnecessary for me to defend my views with reference to the question of Cæsarean section. I admit that Dr. De Lee is competent to determine when and when not this operation should be undertaken; but I stated in my previous remarks that the points he advanced in favor of extending the indications for Cæsarean section are not convincing. The report of the case by Dr. Yarros proves how necessary it is to be accurate in using obstetrical terms and in applying them to patients. For in-

stance, it is important to distinguish between a partial and complete effacement of the cervix from dilatation of the os. We know that the cervix can almost be entirely effaced, and yet the external os is not dilated at all. Part of the progress of labor is the effacement and dilatation of the cervix. The essayist reported that the cervix was partially or only half-way dilated or effaced and then she states there was no progress of labor. It is erroneous to try to convey the impression that we have to size up obstetrical indications by the hour; for instance, if a woman has been in labor ten hours, we should apply forceps; fourteen hours, version; sixteen hours, we should consider Cæsarean section; twenty hours, we should perform craniotomy, etc. That won't do. The indications are determined by the condition of the mother and the child, and they arise from dangerous symptoms presented by the mother or by the child, or by both. The watch is not an indicator for obstetrical operations.

In a case in which delivery may be accomplished by forceps, I do not think Dr. Bacon could be persuaded into doing a Cæsarean section, particularly where there was a conjugata vera of 10½ cm. I do not think Dr. Bacon could be blamed for that. If high forceps are applied, and the conditions for forceps are artificially secured by making incisions when the conditions as to the child are not present, it is not to be wondered at that an attempt of misuse of high forceps for an obstetric misdeed is unsuccessful.

It is dangerous to move the perforated head inside the uterus, as we may tear it by the protruding edges of the hole in the bone. We know there are a number of cases of face presentation where the labor took seventy to eighty hours, and no harm was done, either to the child or to the mother.

In no branch of medicine is it more dangerous to confuse indications, conditions, and terms than in obstetrics — indications which are nothing but a conglomerate of misunderstood terms and a permanent mixing up of indications and conditions. If there is anything which should be clearly understood, it is that conditions and indications are entirely different things. The indication may be present in a given case, or the condition is not there. The condition may be present, but there is no indication. The fœtal head may be low down in the pelvis, the cervix effaced, and already there are conditions for forceps, but no indication for it. To be true to the obstetric art, we should apply forceps simply when the conditions are present. To apply forceps when there is no indication for it may be obstetrics, but it certainly is not obstetrical art.

DR. CHARLES S. BACON: I want to say a word in regard to the matter of what Dr. De Lee has called personal indication or personal relation to the indication for Cæsarean section. I have no doubt he is right when he means that any operator has a right to judge in a doubtful case what the indications are; but that right, of course, like all rights, is open to criticism. I can see that this case of Dr. De Lee's was different from the one presented by Dr. Yarros. The woman had been delivered of two children. Both of them, if I remember rightly, were dead, and there is a great deal of difference between patients who have gone through an experience of that kind and one who has first labor. In a woman with a conjugata vera of less than ten centimeters, even if we suspect a large head, I do not think we have any right to perform Cæsarean section at the beginning of labor, and certainly not after labor has been going on for some hours and she has been subjected to internal examinations. Dr. Yarros, I am sure, did not mean to convey the idea that she would consider such an indication as that. As a matter of fact, we were both disappointed in this case. The child was large. The pelvis, instead of being flat, was a pelvis of rather unusual shape, probably on account of the race of the patient, and, in spite of some degree of labor pains, labor did not progress very well. The final indication for operation was a considerable degree of doubt as to the condition of the child. The child was certainly in very great danger before the operation, and it was simply to save the child, where it was thought the disproportion was not so great but that forceps could be applied for its removal. In that we made a mistake. We found it impossible to draw the head through, although the head was somewhat moulded. It had begun, before the final application of the forceps, to enter the pelvis.

The point is as to how far we can allow personal indications to go, and I feel myself that we can carry it too far. I think Dr. De Lee has carried it just as far as it is safe to carry it.

DR. RACHELLE S. YARROS: In my remarks in reporting the case, I tried to be brief, and perhaps I was too brief. I intended to emphasize only one point, and that is, that sometimes we may decide to do a certain operation, regardless of what we can prove by figures or measurements. I did not say that my case was exactly parallel to that of Dr. De Lee's, and that Cæsarean section was the only operation indicated; perhaps symphyseotomy would have really been the proper thing to do in that case. You know that in a moderately generally contracted pelvis one does not often find it necessary to do anything, and yet in this case it was proven conclusively by the most difficult labor that a mistake in

judgment was certainly made; in other words, we relied too much on the measurements.

Dr. De Lee (closing the discussion): First, in regard to Dr. Bacon's inquiry with reference to the treatment of the omental adhesions, I usually, in cases of omental adhesions to the uterus, waste no time in tying them and cutting between the ligatures, as I am anxious to deliver the child as rapidly as possible. Therefore the adhesions are simply removed by a sponge, separating them from the uterus gently and leaving them alone. The uterus is opened, and they are attended to afterwards. After the delivery, the omentum was spread out on a sterile towel and the openings in the omentum were sewed with catgut.

As to the remarks of Dr. Bacon and Dr. Kolischer, that the subsequent history and findings of the first case did not justify Cæsarean section, of course those points must be considered. One point which I did not emphasize, but which I thought I brought out clearly in the history, was the woman's previous attempts at spontaneous delivery, one of which lasted several days, and the other lasting ten hours, there being active, hard, actual labor, after complete dilatation of the uterus. The physician who saw her in a previous labor was a very careful, conscientious, aseptic man, and knows what he is talking about. He has delivered a large number of women, spontaneous and instrumental cases, and he can tell whether or not there is any abnormality in delivery. He told me that the second labor which he conducted was difficult, after the woman had worked hard, for a good many hours, and unsuccessfully. He applied forceps; the head lay in the inlet, but not fully engaged, and the case seemed suitable for forceps operation. I do not know whether the head was movable or not. The sagittal suture was in the middle line; it was not an anterior or posterior parietal bone presentation. After working hard with the forceps, he did craniotomy; and the child weighed 7½ pounds without its brain. It probably weighed 8¼ pounds. This pelvis had a conjugate diagonalis of 11½ cm. and taking off the conventional 1½ cm., it gave 10 cm. for the conjugata vera. Remembering the point that the top of the pubes dipped into the pelvis toward the sacrum, we would naturally see that the pelvis was not larger than 10 cm., and perhaps had a conjugata vera of 9½ cm. Those of you who have delivered a normal-sized baby through a pelvis such as I have mentioned will be able to appreciate the mechanical difficulties which were present in the case. The head was palpable through the thin upper abdominal wall and easily measured. I made no record of the external measurements, which were taken with Perret's cephalometer. The men who doubt the accuracy and success of cephalometry in pregnancy and labor have not had enough experience with it. I have, time and again, taken measurements with Perret's cephalometer, under favorable and unfavorable conditions, and they have not varied any more than half a centimeter. The head in this case was determined to be large and hard. And when I say I can tell in certain cases whether or not the head is large or hard in favorable cases, beforehand, I am making a statement I can defend in practice. I said the child weighed 10 pounds, and after delivery we found it to be 9¾ pounds. That is not a very bad guess. It is a pretty fair estimate. If I were to consult the history-sheets, where I make a routine estimate of the weight of the child before it is delivered, and compare it afterwards, I should find that there is seldom a variation of a pound. In a pelvis, then, with a conjugata vera of 9½ cm., the weight of the baby 10 pounds, with a history of previous difficult labors, and a contracted outlet, it seemed to me the indications were plain for the operation I did.

Dr. Webster mentioned two points that are of interest. One was mitral disease as an indication for vaginal Cæsarean section. Dührssen, the father of vaginal Cæsarean section, has reported such a case. In looking over his various reports, I came across a case of heart disease in which he performed vaginal Cæsarean section. Dr. Webster also suggested in those cases that the vagina be dilated by hand.

In 1888 and 1889 Dr. Jaggard of Chicago, whom you all knew, recommended in difficult deliveries of all kinds the performance of deep episiotomy. Whether or not Jaggard antedated Dührssen in this regard, I am not sure. Dührssen claims that episiotomy, cutting the levator ani deep into the ischiorectal fossa, is a good procedure as a means of overcoming a tight vagina. That is perhaps better than the suggestion made by Dr. Webster, that the vagina be dilated by hand. This deep unilateral episiotomy, cutting the vagina, perineum, levator ani, down into the ischiorectal fossa, has in my hands been successful in difficult forceps delivery, and especially occipitoposterior positions in tight primiparæ. It is generally known as Schuchardt's incision. Dührssen, in the *Handbuch der Geburtshülfe* of von Winckel, successfully proves his right to priority for this incision. It facilitates immensely the operation, and enables one to reach the cervix, no matter how high it is. I use it very often.

With reference to Dr. Kolischer's remarks, some of the statements he made have been refuted in my reply to Dr. Bacon. With reference to the

question of eclampsia, we are not yet able, so far as I have been able to determine, to arrive at a clear mental picture of it in its ætiology and pathology. I mean the complexus of symptoms that is usually grouped under the name of eclampsia. It is not possible, with our present knowledge, to determine the cause of eclampsia, but it seems to me we are as far away, if not further, than we were ever before as to the cause. It is not possible to find at autopsy a clear and constant pathologic picture. Even Schmorl has not been able constantly to find such a picture, and he, in his later writings, refutes some of the statements made in his former writings, because of his experience in having posted cases that died with the symptom-complex of eclampsia, and where he has not found the changes in the organs he believed to be invariable. At the present time, we must group under the general term "eclampsia" a large number of clinical cases. I do not think we should include under the term "eclampsia" cases of typical epilepsy, of hysterical convulsions, and of hystero-epilepsy. I would not include under this head cases of brain tumor, tubercle of the brain, hemorrhage into the brain, tubercular meningitis, and several other medical and surgical causes of convulsions. But, under the heading of eclampsia, or any other term you want to choose, I would include, for clinical purposes and for purposes of instruction, those cases I have mentioned — those four groups. But when it comes to the treatment, diagnosis, and pathology, I would separate them by such findings as we know to exist. I take it, therefore, that the only difference between Dr. Kolischer and myself is one of definition, or nomenclature. Fever, convulsions, toxæmic symptoms, diminution in the quantity of urine, pathological findings, focal symptoms, necrosis in the liver, transportation of liver-cells, minute hemorrhages, etc., may be grouped under one form of eclampsia.

Dr. Kolischer made the statement that many cases of eclampsia occur without renal findings, either post-mortem or in the urine, and that therefore the kidneys must be considered a negligible quantity. Jaggard said that he never saw a case of eclampsia without distinct evidences of nephritis. Ingerslev reported 106 cases of eclampsia without any microscopic or pathological findings in the kidneys. His examinations were made before the techinque was developed as it should be, and if you will look over the reports of his cases, they are not as convincing as any statement should be in that regard. Charpentier found 200 cases with no renal findings.

In 52 other cases, not mentioned in those I have reported, albuminuria and casts were found in every one. Schmorl, in 71 cases of eclampsia, found the kidneys diseased at autopsy in 70. Therefore it must be said that in typical eclamptics the kidney is more or less involved. All of you have seen nephritics go through pregnancy without eclampsia, but few obstetricians have ever seen an acute nephritis in pregnancy where the women went through without serious conditions to them, and probably convulsions. If they were not typical eclamptic convulsions, still they may have been uræmic convulsions, and come under the third class of eclampsia I mentioned.

In regard to the case of Dr. Yarros, it is one of negative evidence, and in the absence of accurate *data*, and where one was not present and did not see the case, all remarks, to my mind, regarding it would be inapplicable.

As to the diagnosis, in my third case, of hystero-epilepsy, I will say that I have seen hystero-epileptic convulsions, but they are not so typical as the real eclamptic convulsions. They were not as typical as this convulsion was of eclampsia. I have also seen a case of eclampsia, attended with fever, in which the patient had an aura before she lost consciousness; so that it cannot be held that an aura is diagnostic of hystero-epileptic convulsions, in contradistinction to an eclamptic convulsion. In cases of hystero-epilepsy and of status epilepticus, a slight rise of temperature is observed. In the hystero-epilepsy, headache is not a prominent symptom, nor is the blood hyperinotic, as in this case. The blood is hyperinotic in eclampsia. In cases of eclampsia, I have no doubt cases can be found without much rise of temperature. I have had them.

Dr. Charles B. Reed reported four cases of hydramnios in a paper which appears elsewhere in the present issue of Surgery, Gynecology and Obstetrics.

REPORT OF A CASE OF HYDRAMNION

Dr. Henry F. Lewis: The patient, a married woman thirty-three years of age, has always been in good health. The pregnancy, her first, dates from the appearance of the last menses on May 20, 1905.

On November 14th, she entered my service in the Frances Willard Hospital, suffering from extreme pain, constant in the whole abdomen. This had been so severe as to prevent sleep entirely for a period of one week before entrance. For two weeks the pain and distention in the abdomen had been great and increasing. For three weeks there had been at least marked uneasiness in the whole abdomen. The whole tumor was tender on pressure. The rapid growth of the abdomen from the

normal size proper to five months' gestation to much larger than that of full term had taken place within three weeks. The patient noticed no unusual symptoms during the pregnancy up to three weeks before entering the hospital.

The abdomen was distended by a fluctuating tumor, which occupied the whole cavity. The abdominal and apparently the uterine walls were very tight. No fœtal heart tones could be heard and no fœtal parts felt. Ballottement was very marked. The return impact of the head was delayed at least forty seconds. The os was dilated enough to admit a finger-tip, and the tense membranes could be felt at the internal os. No real contractions had begun, although the whole uterus was intensely and constantly painful.

At 5 P. M. on the day of entrance, that is to say, as soon as she could be prepared a metal catheter of the male type was bent into a larger curve, and introduced alongside the uterine wall between it and the membranes for a distance of about six inches, and then the point turned inward. One and a half gallons of clear fluid was slowly drained away through the high opening thus made in the membranes. Fortunately, no extensive rupture of the membranes occurred. The catheter was withdrawn without further loss of fluid, and what was thought to be the normal quantity of amniotic fluid was allowed to remain. Beyond great and complete relief, there were no further symptoms.

The subsequent external palpation enabled a probable diagnosis of twins to be made. The patient left the hospital in a few days to go to her home not far away.

On December 8, 1905, at 10 A. M., the woman again entered the hospital, this time in full labor, which had been going on for about two hours. At 11:30 A. M., female twins were born, within a few minutes of each other. The larger one weighed 2 pounds 2 ounces. Both were placed in the incubator. The larger child died the next day, and the second one on December 10th.

Examination of the secundines shows that there is one large placenta, one chorion, and two amniotic sacs. The dilated sac had belonged to the first larger twin; the other sac was of normal capacity. There were several large anastomosing vessels passing from the cord of one child to that of the other.

DISCUSSION

DR. JOSEPH B. DE LEE: One point that struck me as being interesting in connection with the cases reported by Dr. Reed was the statement that there were generally found unioval twins in cases of hydramnios, and he quoted twenty-two out of forty-six cases which were unioval. Wha were the other twenty-four? They must have arisen from two ova. There are only two kinds of twins, those from a single egg and those from two distinct eggs. We shall have to revise our notion that the majority of twins in cases of polyhydramnios are unioval.

DR. GEORGE SCHMAUCH asked whether any examination had been made of the amnion in these cases.

Both DRS. REED and LEWIS replied that no examination of the amnion had been mad .

DR. GUSTAV KOLISCHER read a paper entitled NOTES ON TECHNIQUE OF OPERATION FOR VESICOVAGINAL FISTULA, which will appear in a later issue of SURGERY, GYNECOLOGY AND OBSTETRICS.

DISCUSSION

DR. THOMAS J. WATKINS: The closure of a small fistula is very different from that of a large one, and in the closure of small fistulæ there has been very little improvement made upon the old Sims operation, especially as perfected by Emmet, except possibly substituting silkworn gut for silver wire.

As regards the position of the patient, it would seem that the Sims position is about as valuable as the knee-chest position. Bozeman, a number of years ago, devised an excellent chair, by which the patient could be placed in the knee-chest position and anæsthetized without very much difficulty.

In the very large fistulæ, the flap operation which Dr. Kolischer has described has great advantages, and in fistulæ which include the entire anterior vaginal wall one can separate the bladder from the surrounding tissue, pull down the bladder, and close the fistula. I would like to ask Dr. Kolischer what the results are in regard to the ureters in cases where we have to separate the bladder and dislocate it in order to close the fistula. In the Doctor's illustration, it would seem that he uses buried sutures in the bladder mucosa. I think it is much better to avoid the use of any buried sutures. One can use a mattress su ure and tie it, so that it can be removed. The use of buried sutures means the use of sutures that have capillary action, and in the employment of those sutures there is always danger that the infected urine may come in contact with the suture and interfere with union.

I have not used a stationary catheter after closure of a vesicovaginal fistula for at least five or six years, believing the danger of infection is very much less without the use of the catheter, and knowing that patients are much more comfortable when one does not use a stationary catheter.

In the last five or six years I have allowed patients to pass their urine voluntarily, if they could, after these operations. If they could not do so, they were allowed to be raised up or even to get out of bed, as I believe a fistula of this kind is badly sutured if it is not strongly enough sutured to let the patient get out of bed without causing any trouble.

As regards the means of preventing the urine from decomposing after these operations, and infecting the wound, Emmet gave sufficiently large doses of benzoic acid to keep the urine acid. Probably a better remedy nowadays is to use urotropine to keep the urine acid.

DR. J. CLARENCE WEBSTER: In the last seven years I have not used any other position than the lithotomy, with the table slightly elevated, so that the eye is slightly below the level of the vulval orifice. I have never seen any case where I thought the genupectoral or Sims position would give any advantage.

With regard to getting access to the fistula in some cases where the vagina is much cicatrized, and where it is difficult to get good exposure, I recommend strongly the incision that Dr. De Lee referred to in connection with vaginal Cæsarean section — lateral episiotomy — especially when the fistula is high up in the region of the cervix. I do not believe it is ever necessary to cut away even the slightest portion of tissue according to the old Sims and Semon methods. I think most men have abandoned that procedure. If we can get results without removing tissue, it is better. The flap method, with its modifications, is undoubtedly the operation in vesicovaginal fistula. I always understood it was Walcher who introduced the method which he termed *autoplastic par dedoublement*. Dr. Kolischer's recommendation of the lateral incision for the purpose of splitting the cicatrized edge is a good one, but I think one gets the same result by Mackenrodt's recommendation of incising in the median line the vaginal mucosa above and below the fistula, and then cutting laterally on each side. This procedure of Mackenrodt, especially in large fistulæ, is of the greatest value. His recommendation to make a long incision through the vaginal mucosa and then dissect laterally, separating the vagina from the bladder, is of the greatest value when we have large openings, the edges of which are difficult to bring together by any other method. Schauta's procedure must be recommended by those who have tried it in the cases in which extensive fistulæ develop, associated with cicatrization to the pubic bone. I have always, in recent years, separated the cervix from the bladder previous to operating on a fistula that is high and difficult of access. It is a very important step. Next, with regard to these high fistulæ, I have always considered it advisable, before operating on vesicovaginal fistula, to make a cystoscopic examination, and if the bladder is infected I do not operate until I put the patient under treatment for the purpose of reducing the infection. I think it is important to catheterize the ureters when they are close to the fistula. Sometimes, of course, one fails in carrying out this procedure in such cases.

With regard to the after-treatment, I always drain the bladder with a rubber catheter, never with a metal catheter. The silver or lead catheter has led to unpleasant results at times, irritating the base of the bladder and inciting contractions of the viscus. I have seen no trouble of that kind from the use of the expanded rubber catheter, and for years I have injected regularly some antiseptic solution in the bladder through the catheter once or twice a day, now using five-per-cent argyrol, ever since that drug has been introduced. These are the chief points I wished to make.

DR. KOLISCHER (closing the discussion): Just a few words in answer to the remarks of Dr. Watkins, who misunderstood me to a certain extent. I said we should try to invert the bladder so as to catch the muscular coat separately, if possible. But that is not always possible. Once in a while the edge of the bladder is so thin that in attempting to run a suture in the muscular coat only, we cannot do so, and as long as we can get fresh surfaces together, we do not invert the mucosa on the outside. The old theory that sutures in the bladder will cause trouble is not so important with our present catgut as it might seem.

So far as the incision is concerned, if we made a large incision after the manner of Mackenrodt, it is difficult to adapt the flaps of the vaginal musosa. We all know, in ordinary vaginal operations, how difficult it is to approximate the edges of the vaginal wall properly; and how often do we get suppuration or cicatrization, with submucous hematomata, because of the extreme difficulty of approximating the folds of the vaginal wall. A smaller dissection will enable us to get this approximation, and consequently primary union.

So far as the treatment of the ureters is concerned it is very important to use the perivesical part of the ureter two or three inches inside and submerge it, as it were, into the vaginal wall. If we dissect this part (indicating on blackboard) from the bladder-wall, we run a suture through the bladder-wall from this side to that (indicating), so that the perivesical part appears to be inverted into the bladder. There is no trouble from that source.

About five weeks ago I operated for cancer of

the bladder, in a man, in which it was necessary to take away the left part of the bladder, so that the perivesical part of the ureter was exposed. I covered it up, and the perivesical part of the ureter was universally inverted. There was primary union, without any trouble. If we are only aware of the fact that the ureter is close to the fistula, and we dissect it out, there will not be any trouble afterwards.

As to position, of course every operator has his preference, and if he is accustomed to use a certain position in operating on these cases he will get good results. It we take a patient who has a fistula high up, with lots of cicatricial tissue, the easiest way to expose it is by putting the patient in the knee-chest position or knee-elbow position. For years and years, Schauta has used the knee-chest position, while Fritsch has used the lithotomy position in his cases. The great advantage in this position is that we need only one instrument to expose the whole surface — one retractor, which can be inserted in the posterior wall of the vagina.

The question of leaving in a stationary catheter is one that has been bothering surgeons for years and years after operating on the male bladder, and this practice has been handed down from one generation to another. It was feared that if we did not drain the bladder, the sutures would not stay. It has been proven that this is entirely wrong. The first man who showed that we could make a suprapubic cystotomy, close the bladder entirely, and not leave in a catheter, was Maydl. You can suture the bladder in the male individual completely, and the man will be able to urinate naturally. It is not necessary to leave in a catheter in these cases, unless it is absolutely indicated. In young patients, if you insert a catheter right off, you won't have any immediate bad results. The results by this method, by those who do not use the catheter, are as good as where the catheter is used. Once in a while it cannot be denied that the stationary catheter will lead to infection. So I think we can do away with it in the vast majority of cases, and while it may be necessary in some, still there is more or less danger from infection attending its use.

RUDODPH W. HOLMES, M. D.,
Editor of the Society.

NEW YORK OBSTETRICAL SOCIETY

REPORTED BY WILLIAM S. STONE, M. D.; EDITOR

Stated meeting of the New York Obstetrical Society, held January 9, 1906.

The President, DR. LE ROY BROWN, in the chair.

THE NATURE OF CANCER

DR. BROOKS H. WELLS, under this title, gave a summary of recent thought on the subject, as expressed by special workers in this country and England.

It included an abstract of the following works: Robertson and Wade (*Lancet*, 1905, vol. i, p. 215) on the life history and forms of the plasmodiophora; Gaylord (*Fourth Annual Report Cancer Laboratory, New York State Board of Health*, 1902–03); Greenough and Warren (first three reports Cancer Commission Howard Medical School, 1900–03); Calkins (*Annual Report Cancer Laboratory, New York State Board of Health*, 1904), on the cell inclusions; the works of Farmer, Moore, and Walker (*Lancet*, 1905, vol. i, p. 1411) on the Plimner bodies and similar bodies; the embryonic theory of Beard (*Lancet*, 1905, vol. i, p. 281); the germinal theory of Beatsou (*British Medical Journal*, 1905, vol. i, p. 291); Nichol's work on the implantation of tissue and its relation to cancer (*Third Report Caroline Brewer Croft Cancer Commission, Howard Medical School*, 1905); finally, a review and the conclusions of the Imperial Cancer Research Fund in London, under the directorship of E. F. Bashford (*Scientific Reports*, Nos. 1 and 2, and *Lancet*, 1905, vols. i and ii). In conclusion, quoting Bashford, he says the study of cancer suggests what appears at first sight to be a series of new problems, but may really be restatements of old ones; viz., Why is the amount of the growth of cancer relatively greater than that of any vertebrate organism? Are growth and cell division always progressive? Is cancer subject to a process of natural decay? or if not, how is its energy of growth and assimilation maintained? To all these questions it should be possible to obtain a definite answer with the means at our disposal, and once they have been answered, the original problem, so long the object of futile direct attack, will present itself in another form, more approachable than the old problem, "What is the cause of cancer?"

THE ÆTIOLOGY OF CANCER OF THE PELVIC ORGANS

DR. HIRAM N. VINEBERG, under this title, reviewed the recent theories of cancer, particularly as expressed by German and French writers. Of the parasitic theory, the most ardent advocates are the clinicians, von Leyden, Czerny, Leopold, Olshausen, and Behla; while the opponents of the theory are the true pathologists, von Hansemann, Orth, Pick, and Israel. After presenting the arguments and evidence for and against this theory, he reviewed the evidence that cancer may be contracted through the marital relations, and concluded that supposed instances of such transference were merely examples of strange coincidence. He referred, also, to the chemicophysical investigations of the cancer-cell as carried out under the supervision of von Leyden. Of heredity he quotes von Hansemann's statement that there is no evidence of a direct hereditary influence, but said that he cannot deny the inheritance of a disposition to cancer. It is not to be feared, however, as the inheritance of the predisposition to tuberculosis. He finally considered the relation of chronic or almost continuous irritation in the production of cancer. As a result of his own experience in dispensary practice among a class of women in whom, *à priori*, we should expect cancer of the cervix to be of common occurrence, he found it to be very rare. Of 19,800 new patients, laceration of the cervix was noted in 1,995, or 10 per cent. The total number of cases of cancer of the cervix was 18, of which 9 were not Jews; 95 per cent of all the patients being Jews. While the Jewish race is very prone to develop cancer, he is inclined to regard their freedom from cancer of the cervix to be due to the marital relations, in which sexual congress is prohibited during menstruation and during the seven days following the cessation of the flow. In this way the irritation caused by the sexual act at unfavorable times is prevented.

DISCUSSION

DR. JOSEPH E. JANOVIN, from his own work, particularly in the line of cancer of the uterus, concludes that the chief thing for the surgeons is, to recognize the condition as early as possible, and to instruct the general practitioner as to the necessity of an examination of all cases in which diseased conditions of the uterus are manifested by disturbances of menstruation or by irregular discharges (spotting) of blood.

Although nine tenths of the cases in his experience are far advanced when first seen, he has had numerous cases in which the disease was so early as to be recognized only by the aid of the microscope. In all such cases, he considers a radical operation to be the only efficient treatment, for which he prefers the vaginal route, unless there are conditions present which render this route more difficult than the abdominal. In the cervical cases in which the cancerous tissues rapidly spread into the parametrium, he removes the uterus and ovaries, and all of the diseased tissue that he can, after which he sears the tissues with the cautery. He then briefly referred to his own statistics of 50 cases, 38 operated on through the vagina and 12 through the vagina, in which there was 24 per cent of absolute cures four years subsequent to the operations. Ten, or perhaps fifteen, he said, had been recognized early in the course of the disease. As the cause of cancer, he believes much credence should be given to the idea that it results from protracted traumatism or irritation, as shown by its more frequent occurrence in married women who have borne children.

DR. EDWARD B. CRAGIN said that the fact suggested by Dr. Vineberg that Jewish women seem to have a relative immunity from cancer of the uterus, possibly due to the absence of irritation for half the month, deserves our consideration. As to any ætiological relations between fibromyomata and cancer, while he had seen the two growths associated in the same organ, he had never met with a case in which the pathologist had reported malignancy in a tumor he knew had started as a fibromyoma. He thinks, in the treatment, that the supposed greater longevity after a radical abdominal operation, dissecting out the enlarged pelvic glands, is more than offset by the increased primary mortality. He referred to a case he had operated upon through the vagina eight years ago without recurrence.

DR. MALCOLM MCLEAN stated that he considers the relation between laceration of the cervix and cancer to be so close that he regards the first condition too dangerous to be neglected. He agreed with Dr. Cragin relative to the absence of any causal relation between fibroids and cancer, although they may be associated.

DR. EGBERT H. GRANDIN would not accept either the parasitic or the infectious theory of the origin of cancer, nor could he accept the idea without limitations, that cancer is due to irritation, because of the following reasons, belonging to all three of the above active factors: He has never seen a cancer of the pelvic organs in a multipara, or in a virgin, or in a prostitute. He has also known of many women with cancer of the uterus, who have had intercourse with their

husbands without in any instance transmitting the growth. Although formerly believing that laceration of the cervix predisposed to cancer, he could recall but two cases of cancer of the uterus out of fifteen hundred Italians, in whom laceration of the cervix so uniformly exists because of their widespread custom of employing unskilled midwives. He thought this relative immunity in Italian women might answer Dr. Vineberg's suggestion as to the cause of immunity in Jewish women. He does not think that in the treatment of cancer vaginal hysterectomy has any reason for existence, because much more disease can be removed from above.

Dr. Ralph Waldo said that whatever theory may be accepted as the cause of cancer, it is very generally agreed that it begins as a local disease. He stated that he rarely performs abdominal hysterectomy in the treatment of cancer of the uterus, and presented a uterus with the microscopic sections that he removed through the vagina from a patient 58 years of age, who had passed the menopause two years prior to his examination. She had had one child, 39 years previously, and Dr. Waldo had repeatedly advised her to have a laceration of the cervix repaired. A diagnostic curettage for uterine hemorrhage had revealed the presence of cancer just within the internal os. She had remained entirely free from the disease.

Dr. L. Grant Baldwin disagreed with Dr. Grandin relative to the infrequency of cancer of the uterus in Italians, as among one thousand hospital cases in which twenty-five per cent were Italians, he had seen twenty cases of cancer of the uterus, all occurring in the Italians.

Dr. C. A. Von Ramdohr agreed with Dr. Vineberg as to the relative immunity of Jewish women to cancer of the uterus.

Dr. Hiram N. Vineberg, in closing, said that he agreed with Dr. Cragin that a fibroid never irritated a uterus sufficiently to cause cancer. The male Jews, he stated, were as subject to cancer as other races. He did not believe that any one would doubt that chronic irritation is a factor in the production of the disease, mentioning a case in which he had seen a cancer of the vulva develop from a kraurosis.

Dr. Brooks H. Wells concluded the discussion by stating that the statistics of a large number of cases seem to show that cancer is more a disease of age than of nationality or any other condition, occurring at about the end of the middle third of life, and at the decline of reproductive activity, due to some inherent quality in the senile cell. He thought, therefore, that investigations along the line of study of the cell itself offered the best chance of ascertaining the nature and cause of cancer. The practical lesson to be derived from recent investigation is that of early operation, using the greatest care to avoid the implantation of cancer-cells upon raw surfaces.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Stated meeting, Wednesday, February 7, 1906, at 8 P. M.

The President, Dr. Arthur V. Meigs, in the chair.

RESECTION OF KNEE

Dr. G. G. Davis exhibited a patient on whom he had done resection of the knee for anchylosis, the result of rheumatism. A very satisfactory degree of motion had been obtained. The knee had been anchylosed at an angle of thirty degrees. The operative resul allowed the patient to bring the knee at right angles with the thigh when in the sitting posture. The piece of bone removed was unusually large.

THE ANATOMICAL BASIS FOR THE TREATMENT OF SCOLIOSIS BY EXERCISE

Dr. R. Tait McKenzie, in a paper of this title, said that in the infant spine there is but one curve with the convexity backwards, and involving the total length. This curve is best seen in the sitting posture. With the assumption of the upright position a sharp lumbar curve makes its appearance, with the convexity forward, and the anterior ligaments and psoas muscle are put on the stretch as the pelvis is tilted forward, while the erector spinæ is increased in size and power. This curve is followed by a curve in the upper dorsal region, compensating in character, while a third in the cervical region takes the same direction as the lumbar curve.

These three curves are physiological, and are found in the normal adult spine. The integrity of these normal curves is protected against the onset of deformity by three lines of defense of increasing strength by: 1. The muscles forming

an advanced mobile series of outposts that can be brought into service powerfully but intermittently; 2. The ligaments, more resistant but less mobile; and 3. The bones which yield to the influence of deformity only after the other two lines of defense have been carried. After the deformity has altered the bony structure, any treatment must be more or less cosmetic in character, aiming at concealment rather than at complete correction.

The muscles that may be used to act on the spinal column, he said, fall into three groups: 1. Antero-vertebral, consisting of the psoas, longus colli, three scallui, and sternomastoid; 2. Spinoscapular and humeral in two layers, trapezius, and latissimus dorsi, rhomboids, and levator scapulæ; 3. Spinal, consisting of the two posterior serrati, superior and inferior, and the erector spinæ.

He pointed out the movements of the spine as flexion, extension, and side bending with rotation. Flexion, he said, is greatest in the lumbar and cervical regions; extension almost entirely in the lumbar and cervical regions; and side bending from the flexed position takes place in the dorsal and cervical regions, with rotation of the bodies of the vertebræ up to the convexity of the lateral curve. Side bending from the extended position of the spine, he explained, takes place in the lumbar region, and rotation of the vertebræ bodies to the concave side of the lateral curve. Rotation was said to be greatest in the cervical region, gradually disappearing through the dorsal. The most freely movable regions are abundantly provided with muscles, and treatment will be directed to the cultivation of them in groups or isolated. In the lumbar region, it was said that the psoas can be made to act upon the bodies of the vertebræ through its attachment to the femur. The erector spinæ, in the lumbar region, can be made to act on both sides at once, or on either one separately to increase the concavity on the active side. In the dorsal region, the erector spinæ is made up largely of tendons; many of its strands are replaced by ligamentous bands. Action upon the dorsal spine will be obtained through the twisting action of the spinoscapular and humeral group through traction on the dorsal spines with counter-traction of the pectoralis on the other side. Action can also be obtained by the unilateral development of the respiratory muscles, increasing the capacity of the thorax, more particularly on the concave side. In the cervical region, the erector spinæ mass is much specialized, and allows of movements in all directions, particularly rotation, in which the deep muscles of the suboccipital triangle may take part.

DISCUSSION ON DR. M'KENZIE'S PAPER

Dr. De Forest Willard said hat since the muscles are such valuable agents in the production and in the correction of deformities, they must be regarded as giving the greatest aid in treatment. He regarded the contribution of Dr. McKenzie, from his accurate anatomical knowledge and practical experience, as of much value to the profession.

Dr. James K. Young spoke of the value of the isolation of he muscles, and thought that if it were brought to bear upon the muscles at fault, cure could be obtained in the early stages of deformity. He felt that in this country insufficient time was given to the exercises, twenty or thirty minutes daily or every other day being the maximum; while in Germany three or four hours daily were devoted to the treatment, with a good degree of success.

Dr. J. Madison Taylor expressed his admiration of the presentation of the subject and of the quality of the artistic diagrams. He emphasized the value of exercises directed to the muscles of the back for elasticizing purposes.

Dr. McKenzie, in closing, stated that the isolation of the muscles is a matter of practice. In many cases a marked amount of isolation could be brought about by starting with a simple movement, by which large groups are employed which have a very indirect influence upon the movement desired. By care and attention, it was possible to confine the exercises to one or two single muscles of the group.

A CASE OF HEMORRHAGE FROM THE STOMACH, DUE TO CIRRHOSIS OF THE LIVER, IN WHICH A GASTROENTEROSTOMY WAS DONE, ON THE SUPPOSITION THAT THERE WAS GASTRIC OR DUODENAL ULCER

Dr. William J. Taylor reported this case. The patient was a man of forty years of age, in apparently perfect health, who had never used alcohol or tobacco, and had no inherited or acquired disease. He was suddenly nauseated, and vomited a quart and a pint of blood. In a few hours there was a second hemorrhage of nearly the same amount. A diagnosis of gastric or duodenal ulcer was made by several skillful medical men, and the patient was nourished by the bowel for two weeks. At the end of four weeks he again vomited blood and passed dark, tarry stools. The blood count was 1,280,000 red cells; 2,600 white cells, and 45 per cent of hæmoglobin.

A posterior gastroenterostomy was done by Dr. Taylor by Moynihan's method and a short loop. No ulceration was found, either in the stomach or duodenum. There was thickening of the wall of the duodenum on its free border, which was

thought to be an acute ulcer, though the presence of free fluid threw some doubt upon this diagnosis. The border of the liver showed no gross lesions. The other organs seemed normal, except that the veins of the stomach intestines and omenum were much dilated. There was prompt recovery from the operation, with no symptoms, except a general œdema of the face, back, genitalia, and lower extremities. with ascites and fluid in the right chest, which subsequently disappeared under diuretics and laxatives. At the end of seven weeks he was greatly improved and feeling well. At the end of ten weeks he awakened from his sleep, feeling nauseated, and, on rising, passed a large bloody stool and vomited over a quart of blood. He continued to bleed from the stomach, but principally from the lower bowel, for five days, and died from loss of blood. No further operation had been undertaken, as the liver was found to be much contracted, and it was believed that there was some obstruction to the portal circulation. Autopsy showed a typical Laennec's cirrhosis, and that death had been caused by rupture of a vein in the wall of the stomach. No ulcer was found either in the stomach or duodenum. There were marked adhesions between the omentum and belly-wall, in which there were large blood-vessels, which relieved the portal congestion.

A CASE OF PERFORATION OF DUODENAL ULCER — OPERATION — RECOVERY

Dr. John H. Müsser and Dr. Edward Martin reported this case, in which operation was done six hours after perforation. The perforation was closed by suture and covered by omentum. There was recovery, with no return of symptoms in six months. The diagnosis of duodenal ulcer was based upon the history, occurrence of acidity, situation of the pain, and absence of history of gastric ulcer or gall-stones. Diagnosis of perforation was based upon mode of onset, acute pain, shock, etc., and rapid development of peritonitis. Diagnosis of peritonitis was based upon local symptoms, rigidity, progressive increase of pulse-rate, of temperature, and of leucocytes.

DISCUSSION

Dr. S. Mason McCollin referred to two cases similar to the case reported by Dr. Taylor, in which there was fatal result.

Dr. D. J. Milton Miller regarded Dr. Taylor's paper of special diagnostic interest, and said that gastric hemorrhage in cirrhosis of the liver, in its substance, resembled so closely many forms of gastric ulcer, that in the absence of the ordinary symptoms of cirrhosis, the diagnosis was wellnigh impossible. He cited a case in which the resemblance of the two conditions was marked during its whole history. Autopsy showed a high degree of cirrhosis of the liver. There had been nothing in the history of the case to suggest the condition of the liver. With the occurrence of sudden, profuse gastric hemorrhage, every attempt should be made to eliminate the factor of cirrhosis of the liver. The differential diagnosis of the two conditions he regarded as a question of very practical value.

Dr. James Tyson referred to the fatal termination of gastric ulcer by hemorrhage when the presence of the ulcer was entirely unsuspected, and of the occurrence of similar cases when cirrhosis of the liver was unsuspected, so that the settling of the question became a matter of probabilities. He thought, however, that in the consideration of such a case, without the presence of symptoms suggestive of gastric ulcer, it would be safe to regard it as one of cirrhosis of the liver. A diagnosis based upon scientific reasoning he believed to be practically impossible in a certain number of cases.

Bearing upon Dr. Müsser's case he referred to a case seen with Dr. J. P. Crozer Griffith within the last ten days, which Dr. Müsser had also seen in the early stages. The patient was an athlete, in apparently perfect health. He was seized with a mild chill on Wednesday, and the condition was diagnosed as influenza. On Saturday he was regarded as convalescent. Early Sunday morning there was suppression of urine, and the case was considered one of nephritis, and a rather careful prognosis given. Between twelve noon on Sunday and five o'clock there supervened a complete change of symptoms. He was in collapse, and the pulse was thready. Death occurred at seven o'clock. Dr. Richard H. Harte had seen him in consultation on the surgical side, and could only conclude that there had been perforation, probably in the duodenum at the upper end. An autopsy was made by Dr. Warfield T. Longcope.

Dr. Longcope stated that the report of the autopsy was not yet completed, but that it would very probably show that there had been a perforated ulcer of the duodenum resulting in general peritonitis.

Dr. John B. Roberts thought the point of special interest in Dr. Taylor's case was that after the operation there occurred adhesion of the omentum to the belly-wall, making what might be called an unintentional attachment of that organ to the belly-wall, such as is done for cirrhosis of the liver. He suggested that Dr. Taylor, in closing, indicate any result which he thought might have occurred following this unintentional Talma's operation.

He thought the case of Dr. Müsser showed that

in cases of hemorrhage which are doubtful the belly should be opened and the liver examined for cirrhosis, as well as the stomach and duodenum for ulcer. He had been much shocked a year before on account of postponing operation for ulcer of the duodenum until "the day after to-morrow," and had had perforation occur earlier than anticipated. He thought it better to go ahead and do what seemed to be indicated, even if sometimes operation were unnecessarily done. He saw no reason for not making the operative examination.

Dr. Edward Martin said that in this particular case reported by Dr. Müsser the diagnostic symptoms were all present. There was sudden agonizing pain, shock, depression of temperature, followed by hurried pulse, local tenderness, and rigidity, and that the diagnosis of perforation was fairly clear, as there was a preceding history of gastric ulcer.

There was also albuminuria. The pain was not only anterior, but referred to the back. Dr. Martin regarded the cases most deceiving in which the parietal peritoneum is not involved, and said it is possible to have a central peritonitis with no pain, no rigidity, and no tenderness, the only symptoms being those of septic absorption and some albuminuria, which is likely to become more pronounced as the absorption increases.

Dr. S. S. Cohen, bearing upon the difficulty of diagnosis between sudden hemorrhage from gastric ulcer and sudden hemorrhage from latent cirrhosis of the liver, recalled a case with gastric hemorrhage with history of alcoholism, with absolutely no history of gastric distress of any kind. The more complete silence of the liver over the stomach led to the diagnosis of gastric ulcer, rather than cirrhosis of the liver. The profound prostration contraindicated operation. At autopsy there had been found more than twenty erosions and ulcers of the stomach. Death had occurred from a second hemorrhage while in the hospital, from a more recent large gastric ulcer. Careful inquiry into the history showed complete silence regarding both the liver and the stomach. He did not think, therefore, that it was justifiable in every case to conclude that the liver was at fault. As Dr. Tyson had said, the question came down to that of a happy guess.

Dr. William L. Rodman referred to the general conclustion that it was practically impossible in one third of the cases to make an accurate differential diagnosis between gastric ulcer and cirrhosis of the liver. He thought it evident from a study of the literature that gastroenterostomy in cirrhosis could not possibly do the same amount of good as it did in gastric ulcer. The difficulty of controlling hematemesis and epistaxis in cirrhotic patients owing to the lack of coagulability of the blood was well known. With an accurate diagnosis of cirrhosis, he believed that it was always unwise to do so serious on operation as gastroenterstomy. This, however, was not said in criticism of Dr. Taylor for his operation, for, under the circumstances, he would probably have done the same thing. He felt that Dr. Müsser was to be congratulated upon the accurate diagnosis, inasmuch as duodenal ulcers, not particularly common in women of any age, are very uncommon in women as young as the patient in which this had occurred. The best diagnostic point undoubtedly was the one made by Dr. Müsser, the deferred pain — three or four hours after the taking of food, instead of almost immediately after, as in the case of gastric ulcer. The disproportion of duodenal ulcers in the two sexes, he said, was shown by a ratio of eight in men to one in women. They are more apt to occur in persons past forty than under this age. Dr. Rodman cited a case of a patient ten years younger than Dr. Müsser's, upon whom he had operated twelve days before for duodenal ulcer, the result of a very extensive burn received in a fire some eighteen months before, since which time, on a number of occasions, she had almost bled to death.

Dr. John H. Gibbon said that he had seen Dr. Taylor's case after the first profuse hemorrhage. Operation had not seemed justifiable then, because the man was cirrhotic, and the fact that a single gastric hemorrhage did not call for operation, unless life were threatened. He felt that repeated small hemorrhages were really the most dangerous.

Dr. Müsser's case was of special interest to him, inasmuch as he had a patient at the time convalescing from perforation at the pylorus, in which the symptoms were similar. The symptoms, which had extended over a period of three years, had been thought to be of neurotic origin. The patient had been suddenly seized with severe pain, and operation was done four hours later. This was Dr. Gibbon's sixth case of perforated gastric and duodenal ulcer. In this recent case the ulcer was a very old one, and, owing to the large amount of induration, he had had difficulty in turning in the edges of the ulcer. The man had had no food by the mouth for twenty-one days, and is now, six months since the operation, taking an ordinarily full diet, and has no gastric symptoms.

Dr. J. Alison Scott thought that in the cases of gastric hemorrhage the cause should be ascertained before operation was done. He had knowledge of three or four cases within the past year which would have done better had operation been deferred.

DR. TAYLOR, in closing, agreed with Dr. Gibbon and with Dr. Scott that a single profuse gastric hemorrhage never justified operative interference. He had been opposed to operation in his case until there was recurrence of the hemorrhage, which was exactly four weeks from the time of the primary one, when there was repeated and almost continued hemorrhage from the bowel. Replying to Dr. Rodman, he said that he did not advocate gastroenterostomy in cirrhosis of the liver, but thought a Tallman operation well worth considering. In perforation of duodenal ulcer, Dr. Taylor had had only one case, which thoroughly recovered after operation. In this he had not done gastroenterostomy, but had drained an immense amount of material. Recovery had been doubtful, but ultimately ensued. Had gastroenterostomy been done with the peritoneum so thoroughly involved, Dr. Taylor did not believe this result would have been achieved.

DR. MÜSSER, speaking upon Dr. Taylor's paper, said that ulcer of the stomach and cirrhosis of the liver sometimes occurred conjointly. Dr. Willard would recall a case operated for him, a patient of late adult life, who had had all the symptoms of gastric ulcer. At operation there had also been found cirrhosis of the liver.

CELIAC OR SPLANCHNIC (SLOCUM) PAROTITIS, WITH RECORDS OF THREE HITHERTO UNREPORTED CASES

DR. W. A. NEWMAN DORLAND referred to Dyball's proposed term of celiac parotitis for this rare complication occurring subsequently to an abdominal or pelvic operation, and said that Professor Harris A. Slocum had suggested that, as the parotitis resulted not merely from surgical invasion, but from splanchnic manipulation or from some obscure interference with the visceral functions, a still more appropriate term would be "splanchnic parotitis." This view was indorsed by Dr. Dorland. A study of the scanty literature forces the conclusion that parotitis ranks, with embolism and venous thrombosis, among the very rarest of the operative sequels of abdominal and pelvic surgery. The ætiology is as yet uncertain, the general belief among surgeons being that it is a manifestation of sepsis acting remotely from the point of infection. The neurotic theory, he said, does not afford a satisfactory explanation for most of the recorded cases. He admits that there is some peculiar sympathetic relationship existing between the cervical and facial glands and the abdominal and pelvic viscera. The distressing symptoms of insatiable thirst associated with stomatic dryness could not be satisfactorily explained, except by some reflex inhibitory action exerted upon the salivary glands by the abdominal incision and peritoneal and visceral exposure. Dyball's conclusions, that most probably celiac parotitis results from the action upon the parotid glandular substance of peculiar toxic bodies which have been absorbed in the blood, presupposes the presence, in any given surgical operative procedure upon the pelvic or abdominal organs, of certain pathological bacteria, in sufficient quantities or virulence to generate toxins, the action of which the devitalized tissues cannot successfully resist. No positive conclusions as to the accuracy of this theory can be deduced until sufficient bacteriologic investigations have been made. Dr. Dorland accepts these conclusions, however, as a working hypothesis. The theory recently presented by Dr. Francis A. Faught was also given, and the view presented is strengthened by the fact that investigations by Michaels in Paris, and Kirk, Faught, and others in Philadelphia, have demonstrated that the function of the parotids may be profoundly altered in certain constitutional diseases, as gout and pyorrhœa alveolaris.

Of the three cases reported, the first occurred in Dr. Dorland's own practice, and is the only one recorded occurring subsequent to an obstetric operation. The case was seen in consultation with Dr. J. E. Roberts of Lansdowne, Pennsylvania, and was that of a young primpara, who, in the last weeks of her pregnancy, suffered from marked renal inadequacy. Progress of the labor was slow. A sterilized French bougie No. 17 had been introduced. Dilatation had advanced sufficiently to justify operative interference. The patient was chloroformed, the membranes ruptured, and a foot extracted. During the delivery of the head a perineal rupture through the sphincter, but not in the bowel, resulted. The fœtus was still-born. An immediate perineorrhapy was performed. The urinary conditions returned to normal within forty-eight hours. On the evening of the third day, there was soreness on the right side of the face and neck, with slight puffiness over the parotid region, which on the fourth day was very pronounced. The temperature rose to 102.4° F. This continued with slight variations for eight days, when fluctuation could be detected. A small incison was made and four drams of pus removed. In twenty-four hours the temperature was normal. The following morning two drams of pus escaped. A second incision was made, a little below over the the angle of the jaw, and one ounce of pus evacuated. The patient made an absolute recovery.

The second case occurred in the hands of Dr. Brooke M. Anspach at the University Hospital. The woman was aged twenty-four, and was admit-

ted suffering from a left tubo-ovarian abscess and a right pyosalpinx. A left salpingo-oöphorectomy was performed and a right salpingectomy. Swelling of the left parotid gland occurred three days later. About one dram of thick pus was evacuated in four or five days. Inflammation occurred in the righ parotid, but subsided without suppuration. There was some suppuration in the abdominal incision. The periparotid infiltration was very pronounced and the induration lasted for quite a long time. No bacteriologic examination of the case was made, but the pelvic trouble was undoubtedly of gonorrhœal origin. Good recovery ensued.

The third case was contributed by Dr. John A. McGlinn, occurring in the service of Dr. William Easterly Ashton. The woman was aged 57, and eight days after a pelvic operation a bilateral parotitis developed with suppuration. The glands were opened and free drainage established. Uneventful recovery ensued. It was not possible to trace any source of contagion.

An interesting fact noted in the cases reported in literature is that 42½ per cent suppurated. It is shown that the condition is one of marked infrequency.

Dr. J. Chalmers Da Costa referred to the association of dryness of the mucous membrane of the mouth which caused an ascending infection involving the parotid and lymphatic glands. Three cases which had been under his care were mentioned. One followed an abdominal operation. The second case occurred after operation for carcinoma of the lip.

Dr. David Riesman thought it surprising that the condition did not occur more frequently than it did, particularly in view of the theory that it was due to an ascending inflammation of the parotid duct. Personally, he believes that in the majority of instances the cause is an ascending inflammation, or a metastatic process, as in typhoid fever or pneumonia. He has seen two cases in typhoid fever and one in connection with surgical kidney. In a recent case seen through the kindness of Dr. Beaver, the woman had gastric ulcer and had developed great swelling of the right check. Suppuration occurred, which, upon removal of the pus, subsided, and the condition disappeared.

Dr. Dorland, in closing, referred to the condition as an ascending inflammation. That the gland should become involved in one case, and not at other times, prevented the formulation of satisfactory conclusions. That little was known of the subject was proven by the scantiness of the literature.

PROCEEDINGS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA

Stated meeting, Thursday, February 1, 1906, at 8:30 P. M.

The President, Dr. Wilmer Krusen, in the chair.

EPITHELIOMA OF THE VULVA

Dr. George Erety Shoemaker said that the case reported showed that enlarged lymphatic glands associated with an epithelioma may be inflammatory in character and not necessarily the seat of secondary malignant disease; also, that it illustrated the good cosmetic results which may be obtained even in cases requiring rather extensive excision. The patient was a woman 51 years of age, who had had six children; the last one, born 12 years ago, was an encephalic and still-born. Though the general health was good, the menses never reappeared after that pregnancy, stopping, therefore, at the rather unusually early period of 39 years. A growth appeared three years ago on the left labium, and gradually extended to the right. There was a loss of 15 pounds in weight in the last three months; present weight, 110 pounds. For two years there was a periodical discharge from the left side of the tumor, preceded by a period of great tenderness and swelling. The discharge was usually black or bloody, and only a few drops in quantity. At these periods of inflammation, which recurred every few weeks, one inguinal gland on the left side became swollen and tender, but never suppurated, growing smaller between the periods and losing its tenderness. There was no history of definite pain, independent of these attacks of inflammation in the growth.

On admission to the Presbyterian Hospital, the tumor projected most prominently from the left labium, was 1½ inches high, and warty in appearance. It involved the upper half of both labia majora and minora, also the lower third of the mons. The preputial folds were indurated and drawn downward, completely hiding the clitoris, which could not be demonstrated.

The operation was complete excision of the

diseased areas, and extirpation of lymphatic glands in both inguinal regions. The external genitalia, including the lower half of the mons, were pared off flat, leaving a wound of rounded outline with a large notch below, where the normal mucous membrane rose over the external orifice of the urethra. A little above this notch was the amputated stump of the clitoris. No diseased tissue was left behind. The problem of arresting hemorrhage and closing the extensive raw surface was met by saturing the surfaces over and over with catgut, using a non-cutting needle, the arterial twigs being controlled by a separate suture for each. This method gradually narrowed the raw surface, and the wound was finally closed by sliding over tissue from the groin, leaving a line of suture in the median line, which branched just above the urethra and passed down on each side over the former sites of the labia. There was some tension, and at first the limbs could not be well separated, but excellent union was finally obtained. The main lines of suture united throughout, except at the point of bifurcation, which was rapidly filled in by granulation. After healing had occurred, it was found that the sliding of uninjured skin had given the parts an astonishingly normal appearance. The result was favored by the fact that the patient had lost flesh, and the skin was somewhat unusually movable.

After the wound was healed, 23 exposures were made to the Röntgen ray with a four-inch spark, in series, the tube 12 inches from the surface; 100 volts 1½ amperes. The treatments at first were given every other day, and then almost daily for a month. There was considerable tanning, but very little reaction, and no hyperæmia. As the wounds were healed before this treatment began, no visible changes were to be expected. The object was to reach cells which may have been undergoing changes beyond the area of visible disease. To the naked eye the growth on section resembled a hard papilloma. The pathological report was epithelioma of the main mass. The gland showing greatest enlargement, however, showed inflammation, but no distinct malignant change. The history of slow growth would tend to show that the growth was originally a papilloma, and benign in type.

DR. JOHN C. DA COSTA expressed surprise at the duration of the disease before operation was necessary. The question arose, whether it was an epithelioma at the beginning, or a non-malignant growth which became malignant. He recalled two cases, in each of which the advance of the disease was very rapid. Operation was thorough, but the return was quite rapid. In one case, in which a most thorough operation was done by his collegue, the woman was apparently cured, but within nine months there was recurrence, not, however, on the vulva, but in the right ovary, which was not at all affected before. The growth in the ovary was probably as large as a large fist. In the other case, the onset was rapid and the return was also rapid. Six months after the operation, the woman died with cancer. DR. DA COSTA had not used the X-ray and therefore could not say anything about the cancer.

EXFOLIATIVE CYSTITIS—VESICAL CALCULI FORMED ABOUT A LIGATURE

DR. R. C. NORRIS reported these two cases.

CASE 1. An exfoliative cystitis. A married woman, 32 years of age, upon whom he had made a cystoscopic examination and made the diagnosis of acute cystitis. At the end of three weeks, during which time she hod been under treatment, she returned with a sloughing mass blocking the urethra, and a greatly distended bladder. This mass proved to be a perfect cast of the bladder, which, upon microscopic examination, proved to be composed of vesical mucosa and part of the muscular wall. The patient made an excellent recovery.

CASE 2. Vesical calculi formed about a ligature. A married woman, 32 years of age, who, three years previously, had a suprapubic cystotomy for cystitis. The patient was temporarily improved, and one month later the symptoms recurred, and the patient passed a large silk ligature coated with urinary salts. During the past two years the patient had symptoms of marked cystitis. Upon cystoscopic examination, a stone was found suspended from the interior wall of the bladder, in such a location that in some positions it would block the urethra. Vaginal cystotomy was done, and the patient made an uninterrupted recovery.

DR. SWITHIN CHANDLER found that there had been an injury to the mucous membrane of the urethra in a good many cases in which physicians had catheterized a supposed cystitis. Where prompt treatment was given, it was found in many cases that the bladder did not become infected.

Relative to the suggestion that the cause of the trouble was the difference in circulation, in perhaps thirty per cent of the cases Dr. Chandler had examined, just at the opening of the ureter on the left side there was an acute hyper-

æmia, when there was no such condition in any other part of the bladder. Regarding foreign bodies in the bladder, it was his experience to report, about two years ago, two such conditions. There was no formation of stone. One of them occurred in a man who was using one of the ordinary piston syringes, which slipped from him and entered the bladder. There was some irritation, which was relieved. In another case a part of a glass catheter remained in the bladder for six months. It was removed, and no condition found, except the concretions around the glass.

Dr. George Erety Shoemaker said that organisms are unquestionably found both in the bladder and in the urethra on a great many occasions when they are doing no harm. He thought it probable that instrumentation was responsible for many cases of bladder disturbances, as a slight traumatism will produce conditions favorable to the more virulent or active stages of the organisms present. A number of cases had come under his observation, from hospitals other than those with which he was connected, who had suffered from cystitis. Naturally, this would give the hospitals a bad name. He said that nickel-plated instruments should be carefully examined for a peculiar form of scaling of the nickel which produces a knife-like edge injurious to the urethra. Especially liable to this were instruments which had been replated. It was suggested that some glass catheters, also, were capable of producing traumatism from imperfections.

Dr. Theo. A. Erck, regarding foreign bodies acting as a nucleus for calculus formation in the bladder, recalled assisting Dr. Baldy in a case in which a large horseshoe pessary was found to be the nucleus. In this instance the usual thickness of the pessary had doubled by the encrustations with the urinary salts. There was no evidence in the vaginal and bladder wall of any ulcerative process, and the conclusion arrived at was that it had been introduced through the urethra.

Dr. Charles P. Noble, in twenty years' association with hospital work, had never seen a case of exfoliative cystitis, or a stone in the bladder formed about a foreign body. He referred to the general tendency to place the blame for the occurrence of cystitis upon the nurse, which he did not believe was a fair statement of the case. He believed, rather, that cystitis is due to the depressed condition of the patient, caused by septic disease calling for operation, and the interference with the circulation of the bladder, rather than to faulty technique on the part of the nurse. In illustration of this, he referred to the paper by Dr. Thomas R. Brown, upon cystitis in women. This paper covered a large series of cases of cystitis with the bacterial findings. It was shown that almost all these cases had arisen in a well-conducted hospital, where, supposedly, the technique used by the nurses was as good as, if not better than, that in hospitals in general. He had not had a case of cystitis following catheterization in the office. This he attributed to the good general condition of office patients, who had not been depressed by operation, as would be the case in hospital cases.

Dr. George M. Boyd agreed with Dr. Noble regarding the susceptibility of the depressed patient to cystitis. This was particularly well demonstrated in the obstetrical patient, which he said, was easily explained in the trauma incident to labor. He referred to what might be called epidemics of cystitis in the Lying-in Charity Hospital following the use of the catheter. At the present time, rather more freedom is allowed, and the patient is taken out of bed for functions of bowel and bladder. He has not seen a calculus in the bladder with the ligature or other foreign body as its nucleus. He had, however, removed a couple of sutures from the bladder that had evidently penetrated the bladder-wall and acted as foreign bodies. He had had the unpleasant experience of breaking a glass catheter in the attempt to catheterize a patient in the progress of labor. Fortunately, he was able to dilate the urethra with his finger sufficiently to locate the inch of catheter and bring it parallel to the small forceps, and removed it without incision of the bladder-wall.

Dr. Brooke M. Anspach said that at the University Hospital, in order to prevent the traumatism incident to repeated catheterization after operation, the patient was enabled to void urine after the use of the method suggested by Baisch, which consisted in the injection of a 25-per-cent solution of boroglyceride when the bladder was full. When the bladder is full, and the patient complains of a feeling of distention, a soft rubber catheter is slowly introduced into the bladder until urine begins to flow; the catheter is then compressed while the nozzle of a glass syringe is attached to it, and then about 50 c.c. of a 25-per-cent solution of boroglyceride is injected. The catheter is then removed without allowing any more urine to escape; the patient, a short time after, will void urine spontaneously. The

results have been found satisfactory in a good many cases.

Dr. Ellis E. W. Given asked what objection there would be to leaving the boroglyceride out and passing the catheter in a little farther and catheterize the patient.

Dr. Anspach replied that after a patient had once voided urine she would usually be able to do so afterwards. He explained that the boroglyceride solution caused active contractions of the bladder. The use of it might be repeated several times in obstinate cases; as a rule, once is sufficient. In this way there was avoided the traumatism liable to follow two or three catheterizations a day, which certainly played an important part in post-operative cystitis.

Dr. Norris, in closing, said that in three cases of cystitis treated recently he had used the iodide of silver in five-per-cent solution. This was a rather new remedy which had been recommended by Dr. E. H. Siter of Philadelphia for use in genito-urinary work. This was less irritating than argyrol, protargol, or nitrate of silver, and seemed to stay in the bladder for a good many hours, as the urine would be colored for some time after its instillation. It is yellowish in color, and has the advantage over most of the salts of silver, in that it does not stain the clothing. It is also cheaper and is claimed to be more even in strength than argyrol. A disadvantage is the difficulty of having it made up properly. It is also of value in gonorrhœal infection about the external genitalia.

PREMATURE SEPARATION OF THE NORMALLY SITUATED PLACENTA, WITH REPORT OF THREE CASES

Dr. William R. Nicholson expressed the belief that in the majority of the cases this accident was explained by the presence of decidual lesions, the traumatism so often invoked to explain them being only the exciting cause, and in some cases having no causal relationship. From the diagnostic point of view, the most important symptom was the peculiar pain, which pain was differentiated from that of true labor, in that it was continuous, and unassociated with progressive dilatation of the cervix. Collapse was mentioned as a late sign, and not to be waited for. Placenta prævia, threatened abortion, and miscarriage may also simulate the condition.

The treatment was considered under the following three divisions: 1. Occurrence of the accident in the latter part of the second stage of labor; the indication being the application of the forceps for version, or, very rarely, for craniotomy. 2. Occurrence in the early part of labor, with the os not dilated; the indication being as rapid dilatation as possible, either by manual or instrumental means (the Bossi instrument), with termination of delivery without regard to the life of the child. 3. Occurrence before the beginning of labor; here the treatment consists in the same attempts at dilatation as in the second division, but in a smaller number of cases of this group the indications can best be met by Cæsarean section, with removal of the uterus, or its retention, according to the individual case. In this third division of cases the most serious prognosis is to be given. Dr. Nicholson does not think that Cæsarean section is frequently indicated in these cases, but that in a very small number of such cases occurring before there is any obliteration of the cervix or dilatation of its canal, this section offers better chances for the mother than prolonged attempts at dilatation of the resisting cervix. The abdominal section is preferred to the vaginal because of its relative simplicity. It is, of course, understood that a capable operator should be called at an early stage of the case.

The three cases reported were illustrative of different types of cases. The first occurred during the latter part of the second stage, and was relieved easily by forceps, a dead child being delivered. The second case occurred in the early months of pregnancy, and was successfully terminated by the usual conservative methods of dilatation of the cervix. The third was in the last month of pregnancy, associated with a grossly deformed child, and resulted fatally to both mother and child. None of the cases were of the concealed variety, though there was some evidence that early in its course the third case was of this character.

Dr. George M. Boyd's experience with complete separation of the placenta, he said, was rare. Partial separation he believed to be more frequent than is generally supposed. The magnitude of the complication was dependent upon the stage of gestation. While he indorses Dr. Nicholson's plan of radical interference, he would not regard Cæsarean section favorably, because of the danger to the child's life.

Dr. Daniel Longaker, reviewing four or five such cases, said they had occurred in miserable, neglected, and abused women, one half of the cases probably occurring as the result of direct violence. Treatment, he felt, called for the rarest judgment. The child required no consideration, because it was dead, and the women were in no condition to bear Cæsarean

section. He does not think Cæsarean section could be suitable in many cases. In his four or five cases, one or two of the women died after delivery by the natural way, within a few hours, as the result of shock of delivery and of hemorrhage antedating delivery.

Dr. Edward W. Watson thought that any one who had struggled with a case of concealed hemorrhage with undilated cervix was aware of the almost impossibility of saving the life of the mother or of the child. The diagnosis he considered difficult, and without visible hemorrhage he felt that the risk of doing operation when not necessary would be very great.

Dr. Nicholson, in closing, explained the apparent misunderstanding of his paper by stating that he did not advise that a woman should be immediately subjected to Cæsarean section upon the presentation of symptoms of premature separation of the placenta. In the third case, had he known that the child was deformed, and had he been ready to perform Cæsarean section, he believes the life of the mother could have been saved. His meaning was, that if the case presented a cervix neither obliterated nor easily dilatable, with marked symptoms of blood loss, Cæsarean section offered much better results for the woman. In this, he said, he was upheld by Hoffmeyer. He felt that the rapid dilatation of the cervix, sufficient to deliver the child, subjected the woman to as great shock as did Cæsarean section. Also, this method did not allow control of the blood-supply. He would favor a Porro operation in preference to a Sänger. In the majority of cases, the women, he said, had borne a number of children, and there were present endometritis and an actual metritis, so that the uterus might as well be removed. While this might sound radical, it should be remembered that fatal hemorrhage was being dealt with. The vast majority of cases would be delivered without recourse to such procedure. He emphasized the diagnostic importance of the severe pains in the uterus. In the literature this was regarded as the principal symptom.

Referring to Dr. Boyd's want of approval of Cæsarean section, he thought that in dealing with hemorrhage likely to kill the mother, it was necessary to treat the bleeding, and this, he believed, was better done by abdominal operation than a Dührssen, which required more time and more skilled assistance. He pointed out that the cases do not always occur in the clinic-room, with all necessary appliances at hand for a Dührssen operation. With reference to Dr. Longaker's mention of violence as a cause of the condition, he thought examination of the cases would show a diseased condition of the endometrium in the vast majority, explaining the separation of the placenta. Were direct violence the cause, he thought there would be more cases. Referring to a certain proportion of Dr. Longaker's cases being fatal, he believed that Cæsarean section would not have been any worse, and would have offered a better chance for the life of the mother.

REPORT OF AN UNUSUAL CASE OF ECLAMPSIA

Dr. William H. Randle read a paper upon puerperal eclampsia, and reported a case of twin pregnancy complicated with this condition. The urine, prior to the admission to the hospital, had been found to be free from albumin. On admission, the patient had had four convulsions; pulse 180, weak and irregular; respiration 40; temperature slightly elevated. The patient was delivered by podalic version. She remained unconscious for 72 hours, and then gradually improved. The writer emphasized the value of prophylactic measures in the treatment of eclampsia. Veratrum viride was to be employed cautiously; morphia, to be avoided. Saline injections were considered valuable, and hypodermoclysis was said to dilute the toxines and favor elimination.

Dr. C. P. Franklin said that the ophthalmologist and the obstetrician had only two points of contact—that of the blindness of eclampsia and of ophthalmia neonatorum—and suggested that when babies were born with glasses a third point would obtain. The terms "amblyopia" and "amaurosis," he said, were used indiscriminately by physicians, although, as understood by ophthalmologists, amblyopia was an interference with sight, not complete; and amaurosis, complete blindness. Amblyopia, he remarked, occurred in conditions other than that of pregnancy, such as scarlet fever and measles. When there is albuminuria, it is found most frequently in scarlet fever or measles. The cause, by some authorities, is supposed to be an anæmia of the ophthalmic artery, but the true ætiology of eclamptic amaurosis, he said, seemed to be that the centers controlling sight were so poisoned by non-eliminated toxines that they could not perform their functions. It was found in association with the usual symptoms of brain irritation. One of the peculiarities of the condition was, that in cases of eclamptic blindness the pupils were myopic or contracted. Occasionally the eyes would be diverged when the external ocular muscles were more active and pulled the eyes apart. The pupil was myopic, but

responded to light stimulation. This, he said, was the direct opposite of the Argyle-Robertson pupil. Eclamptic amaurosis came on rapidly, and was distinguished from the blindness of chronic kidney disease by the fact that it was complete within a comparatively short time; whereas blindness of chronic kidney disease was slower, and practically never complete. These two conditions were said to be rarely associated. and in an examination of the eye-grounds of uræmic amaurosis there would be found nothing out of the normal. This was regarded as another proof that the whole trouble was in the brain, and not in the eye itself, in contradistinction to the blindness of kidney disease. The prognosis was said to be good, because the blindness improved as the albuminuria disappeared. General treatment of the albuminuria was the only remedy. Dr. Franklin had seen Dr. Randle's case in consultation. There were none but subjective symptoms to be noted, and the case was interesting from the view-point of the ophthalmologist.

Dr. Tallant said that the results in the treatment of the condition in the New England Hospital in Boston showed, in a period of eight years, that the mortality was ten per cent. The treatment was largely elimination through the bowels and skin, and, as far as possible, flushing of the kidneys. In only two cases was veratrum viride employed. Nitroglycerine was used only occasionally, and morphine probably not at all. The convulsions were controlled by chloroform. Saline infusions were frequent. Dr. Tallant inquired whether the urea contents were noted in the case reported.

Dr. J. C. Applegate agreed with the author of the paper that while the true ætiology of eclampsia is still in doubt, it is a grave manifestation of the toxæmia of pregnancy, identical with emesis gravidarum and other minor toxæmic disturbances, except in form of manifestation; eclampsia affecting the cerebral cortical centers, while emesis, etc., when not due to reflex causes, affect other nerve centers or peripheries, hepatic insufficiency lying at the foundation, and the direct result of inefficient elimination of the excess of toxines. He does not approve of the use of turpentine in any manner in eclampsia. In his experience, it had been used in one case for tympanites, after which there was hæmaturia, increased arterial tension, cessation of the uterine flow, and recurrence of the convulsions.

He does not approve of bleeding, believing that the eclamptic patient is already bled in every conceivable way, by diaphoresis, free catharasis, etc. Extraction by elimination, and dilution with the normal saline solution, he believes to be the better plan. The guiding star should be the estimated quantity of urea eliminated, which shows conclusively the degree of perversion in the process of metabolism.

Dr. John C. Da Costa strongly advocated bleeding in these cases. He had not had, in his own practice, a case of puerperal convulsions. One reason for this was that he would not attend a woman unless he had had her under his own care for at least six weeks before labor. When called in consultation upon a case, if there has been but one or two convulsions, he empties the stomach, bladder, and bowels. If the convulsions continue, he bleeds. He called attention to the fact that often upon opening a vein there would appear a black tarry stream, followed by blood only after considerable manipulation of hand and arm. He recalled the statement of Ellersley Wallace, that in 25 or 30 post-mortems on women who died in puerperal convulsions, he had found in all but one a large clot of blood in the brain. In the cases in which Dr. Da Costa has bled, the women have made good recoveries, and have had live babies. In the cases in which he had not been allowed to bleed, and in which, against his protest, pylocarpine had been used, the women had died of œdema of the lungs, drowned in their own fluids.

Dr. Alexander H. Davisson referred to a case of a pregnant woman whom he had bled on account of intense headache, growing worse over a course of two or three days. He introduced a bougie to induce labor, and at the same time opened a vein in the arm, withdrawing a considerable quantity of dark-colored blood. The headache entirely disappeared, and she went quietly and naturally into labor.

Dr. William R. Nicholson believed that the urine of a pregnant woman was not examined sufficiently often. In the latter part of pregnancy this should be done every week. A certain percentage of cases, he stated, would have convulsions before there was albumin. He believed with Dr. Da Costa that there was too little bleeding. With reference to the obstetrical treatment, he thought it proper to treat the cases without regard to the pregnancy. He does not believe the urea is worth estimating, unless the nitrogenous intake is ascertained.

Dr. Randle, in closing, expressed his belief that venesection was resorted to too frequently. If the case were in violent convulsions, he saw no reason why the uterus should not be emptied at once. He has not seen a case in which he

could not dilate the cervix bimanually and empty the uterus. The amount of blood thus lost, he thought, rendered venesection unnecessary. He had seen morphine used in sufficiently large doses to stop the convulsions, but it had become impossible to unlock the secretions, and enæmas of different kinds had failed to move the bowels. He believed that puerperal eclampsia ought to be looked upon as an emergency case, and that it should be admitted to the hospitals, whether or not the hospital have a maternity ward. No matter how complete the home, the patient could not be as well cared for in such condition as in a hospital.

HEREDITY AND THE OBSTETRICIAN

Dr. Edward W. Watson said that heredity should interest the obstetrician, in that he could not avoid some speculation upon the future career of the numerous beings he ushers into life. Such questions must arise as, How much will heredity influence them? Must bad strains be perpetuated, or disappear only to be the destruction of the unfit? Recent work along the lines of Mendel's rediscovered law might well make one reach conclusions slowly. He questioned whether there might not be another way leading to the recovery and restitution of a debased strain; a law by which badness may breed goodness; imperfection, perfection. Analogy in the experience of the fowl-breeder seemed to suggest that aberrant physical characteristics may, if crossed in certain definite ways, bring back the true parent strain. The possibilities to humanity, with the existence of such a law, would be incalculably valuable. Nor is it wholly improbable, remembering that the line which separates a vice from a virtue is thin; that the miser is half-brother to the prudent; the spendthrift, to the generous. While criminals of the same kind might perpetuate their peculiar vice, criminals of different kinds might, in their offspring, neutralize their bad traits, and even evolve virtues.

Dr. Henry W. Cattell said that disease, as stated by Landousy, could only be caused by heredity, infection, and intoxication. In the case of pebrine (silkworm disease), the organisms are introduced into the egg while it is still in the body of the butterfly, and in chronic poisoning with alcohol and lead, these toxic agents have a direct harmful influence upon the embryonal cells. By removing infection and intoxication from the discussion, he said, a most complex subject is somewhat simplified; but how could any one explain the fact that years after the death of her first husband a woman may give birth to a child having the physical and mental characteristics of the one deceased. While the chromosomes have taught much, they have not solved the problem of heredity.

ABSTRACTS OF CURRENT LITERATURE

DEPARTMENT OF SURGERY

UNDER THE CHARGE OF

JOHN B. MURPHY, M. D. — E. WYLLYS ANDREWS, M. D.
FREDERIC A. BESLEY, M. D. — WM. R. CUBBINS, M. D.

CONTRIBUTION TO THE CLINICAL COURSE AND SURGERY OF BRAIN ABSCESS. By W. Bibrowicz.

The author reports 12 cases observed since 1891. Nine were genuine abscesses, two were meningoencephalitic, and one was a tuberculous meningitis. Of the nine abscesses, six were operated upon and two cured. Three other operated cases were complicated from the beginning with meningitis, but the operations were not contraindicated by that fact. Cases 1–5 were traumatic. In case 1, after four days, symptoms of meningeal irritation and of involvement of the motor region arose, with eventually paresis of the lower and upperextremities. The abscess was located and found by puncture. Drainage and a cure followed. In case 2, the first signs of a brain lesion were hemianopsia and hallucinations with following motor and sensory disturbances. The abscess was emptied three times. Death followed. In case 3, after eight days, symptoms of a localized brain lesion arose. Meningitis was also present. Operation was done, and death followed with meningeal symptoms. Cases 4 and 5 were not diagnosed. In case 4, gumma was suspected, and corresponding treatment instituted. There was no operation. Autopsy showed abscess in left perietal lobe with basilar meningitis. Case 5 was suspected of being a tumor of the pons. The patient died before a diagnosis was made. The abscess was in the left frontal lobe. Case 6 had an abscess in the temporal lobe from osteomyelitis of the cranium. Cavity was drained and patient was discharged cured, and remained so two years.

In case 7–11 a chronic otitis media preceded. Cases 7 and 8 were abscesses complicated with meningitis. In both, abscesses emptied. In case 7, death resulted from meningitis, and in case 8 there was a double abscess, only one of which had been drained. Cases 9 and 10 were those of meningoencephalitis, case 9 being complicated with a dural sarcoma. Case 11 was a tuberculous meningitis. In case 12, which was a metastatic brain abscess from a chronic empyema, the possibility of a pus accumulation was considered, but not operated upon, because of the fact that secondary brain abscesses are usually multiple, but only one was found at autopsy. Puncture is urged as a means for diagnosis when others have been exhausted, since this procedure is practically without danger. This method is to be used to find an abscess when one is diagnosed, and to determine whether one is present when a brain lesion has been diagnosed. Mistakes can be made if abscess is very small, but if it is of the size of a pea or hazel-nut, it can seldom become dangerous to life, unless it is just below the cortex, and thus can cause perforation meningitis, or unless it should invade vital centers or press upon the fourth ventricle. On the other hand, an abscess may not be reached, but the number near the base of the brain is very small. Puncture is advised, under local anæsthesia, with a large needle, through the openings in the anterior and posterior regions of one half of the skull, and through both sides if necessary.—*Beitrage zur Klin. Chir.*, bd. 47, heft 2, 1905, p. 407.

SURGICAL TREATMENT OF DISEASES OF THE BRAIN. By Fedor Krause.

This is a general article. Under the heading of skull and brain injuries, the author emphasizes the necessity for laying the wound wide open, removing clots, etc., tamponing with gauze in bandage form, to be removed in 4–6 days, and sewing up the wound as much as possible. In puncture and bullet wounds of the brain, he operates only in the cases in which severe hemorrhages give the indication. He cites a case where bullet was removed later, giving his method of reaching the pituitary body through an osteoplastic flap in the temporal bone lateral to the frontal sinus and by loosening the dura to the optic foramen. Under the heading of epilepsy due to splinters of bone, etc., he states that complete cure is not the rule, but that the earlier the treatment, the better the chance. When brain abscess is suspected, operation is advised. Brain-tumors of the motor and neighboring regions belong to the surgical

field, because the site can be determined and the location makes surgical intervention easy. Trephining is asserted to be almost without danger. Even tumors in the posterior fossa can be reached, and since they are oftenest benign, they are real objects for the surgical endeavor. Tumors of the cerebellum are discussed, and are reached by making a right angular flap, above at the occipital protuberance, and with the base below and between the mastoid processes. Both transverse and sigmoid sinuses are freed, the dura is cut below and medianwards from these, the occipital sinus is tied and cut, and then the dural covering of the cerebellum is turned down in one flap. The tentorium is lifted up and whole area exposed. Kraus advises operation in Jacksonian epilepsy, and when no pathological change is found, and nothing on puncture or incision, he advises stimulation with the faradic current with one pole to determine foci. For the finding, also, of subcortical tumors, faradic stimulation of the cortex is of great importance. — *Deutsche Medicinische Wochenschrift*, Nov. 23, 1905, p. 1873.

PANCREATITIS AND GALLSTONES. By M. M. E. Quenu and Pierre Duval.

The relation of gall-stones to pancreatic diseases is discussed as to the frequency, the etiology, pathogenesis, morbid anatomy, and treatment. The more there is known about pancreatitis, the more frequently it is recognized. The authors believe that gall-stones are as frequent in the choledochus as in any other location, and that chronic pancreatitis is a very common lesion that occurs in conjunction with and because of the gall-stones in this location. Acute suppurative pancreatitis and hemorrhagic pancreatitis are also common complications of stones in the ampulla of Vater. On the other hand, there is no evidence to show that pancreatitis is the cause of the formation of gall-stones.

In most gall-stone cases the hepatic syndrome has existed for years; in large numbers, the icteric syndrome has existed for a long while, due either to infection or to a more or less marked obstruction, producing repeated attacks of jaundice or a chronic icteric condition. In a few cases the pancreatitis shows itself without any previous warning, but the anatomical examination always shows a hidden stone. The morbid anatomy of pancreatitis is classified as follows: 1. Hæmorrhagic pancreatitis; 2. Suppurative or necrotic pancreatitis; 3. Chronic pancreatitis; 4. Cysts of the pancreas.

The acute pancreatitis may be primary or follow the chronic; it may show either as suppurative and necrotic or as hemorrhagic; it is usually in spots, and located at the head of the gland. Abscess of the lesser cavity is very common, and may be accompanied by thrombosis of the splenic or portal vein. But there are several cases of abscess in the tail of the gland that have been reported. Acute fat necrosis is commonly found. The bacteriological examination shows bacillus coli communis through all the organs and in the abscess. While in the abscess, the bacillus lactis aerogenis and bacillus coli communis and the proteus vulgaris are all in evidence.

Chronic pancreatitis is always located in the head, and is usually noticed as a hard tumor — an induration — and is not to be differentiated from a cancer, except by a microscope.

This tumor is seldom diagnosticated clinically, but is discovered by operating. These indurations may compress the larger ducts, causing jaundice, with infections, or they may shut off all the smaller ones, causing cystic dilatation. The physical symptoms of a complicating pancreatitis are little known, for, as a rule, they are lost in the hepatic syndrome, but, when present and recognized, are always an indication for surgical interference. The result of the examination of the urine after the method of Cammidge seems to give excellent results, and the same is true of the examination of the fæces after the method of Gaultics.

The treatment of acute peritonitis must always be surgical, and accompanied by thorough drainage to prevent the escape of the pancreatitic ferments into the peritoneal cavity. The accompanying gall-stone trouble must be cared for, and the gall-bladder or ducts drained at the same time.—*Révue de Chirurgie*, Oct., 1905.

THE CIRCUMSTANCES OF 241 OPERATIONS FOR PERITONITIS. W. Noetzel.

This communication embraces all cases from the hospital at Frankfurt A. M. and from the private work of Professor Rehn since 1891. No cases of peritoneal irritation which healed spontaneously are included, and no case of idiopathic peritonitis was seen. There were 165 cases of peritonitis after appendicitis, with 84 cures and 81 fatal outcomes. This condition is the most favorable and the most common, and though the percentage of cures is better in the next class of cases, the group of appendicitis peritonitis includes many (37) more or less moribund patients, only a small percentage of which could be saved. Further, in early years the percentage was much worse. The subject is treated very completely and in a general way when discussing these appendicitis cases. The pathological picture was that of fibrinopurulent peritonitis. Two other forms are

mentioned. One is a hemorrhagic peritonitis in which a bloody serous exudate fills the abdomen and there are hemorrhages in the serosa and in the mesentery. These are usually fatal. The other form is the so-called "peritoneal sepsis," which are all fatal, and which show no pus and no fibrine; the serosa is reddened and not dull, and on making smears, many bacteria are found. Inside of the first three days the prognosis is good in adults, for there were only 19 deaths in 59 cases, and later the prognosis is less favorable. Most of the fatal cases in the early period were in children. The good results are not due to a less extensive involvement, but because the general resistance is not reduced. The results lead the author to assert that in every case of peritonitis the operation is harmless and is indicated.

There were 38 cases from inflammatory uterine adnexa, with 25 recoveries. There are two general groups: one where there was originally a pelvic peritonitis and a subsequent general invasion, and a second one, where a ruptured tube or abscess directly infected the peritoneum. Most of these cases were gonorrhœal in origin. Five cases of puerperal peritonitis from perimetritis are recorded, with two successful results. Six instances are reported of diffuse peritonitis from a rupture of an inflamed gall-bladder, with two cures. Here are not included the cases of circumscribed peritonitis around a perforated or gangrenous viscus. The fatal cases were advanced ones, and in patients over 50. Twelve cases of perforation of the stomach are discussed, with 50 per cent cures. One of these was a perforated duodenal ulcer. The prognosis is good, if operation is done early, and if the perforation opening is closed. In all of the eleven cases of peritonitis after perforation of the small intestine there were fatal outcomes. The assertion is made that such perforations are the most unfavorable of all such in the abdomen. The laceration of the stomach is less so, because the gastric contents are less infectious, and chemically more destructive to the peritoneum than the contents of the small bowel. Further, the stomach is more often empty, and even from a full stomach no such amount of infectious fluids are poured as from the smaller hole in the upper intestine. Even the perforation of an abscess or an appendix can have no such tremendous influence. Four other cases from different causes are added. In all, there were 241 cases, with 120 deaths. It would be wrong, however, to conclude that the operative results in peritonitis are only 50 per cent, since infections are so different and individual resistance so varied.—*Beitrage zur Klin. Chir.*, bd. 47, heft 2, 1905, pp. 241.

Surgical Intervention in Tuberculosis of the Meninges and of the Brain. By Roberto Alessandri, M. D., Rome.

The subject under discussion is approached by the author from a questioning view-point as to the possibility of surgical intervention. He states that in tubercular meningitis, in general, surgical intervention is considered almost impossible.

The following considerations he believes to be of value:

(*a*) Cases of tuberculous meningitis do not all present themselves under the form of miliary eruption; they are not all equally diffuse, nor in the same region of the brain.

(*b*) Although of very rare occurrence, a spontaneous healing of the process is nowadays considered possible.

That being so, will surgery never be able to lend assistance?

A report of twelve hundred autopsies is given, in which appears fifty seven cases of tuberculosis of meninges and brain. In two cases the lesion was limited to the convexity, and might have been accessible.

He reports a case, operated upon by himself, who was suffering from a healed tuberculous meningitis.

Of surgical intervention in solitary tubercle of the brain, he says: The most frequent occurrence is in children; compared with other varieties, it is the tubercle that is, in their case, the commonest cerebral tumor. It is also in the child that we most frequently meet the multiple tubercle, very frequently accompanied by more or less diffuse meningitis.

In adults, on the contrary, it is relatively rarer, and, besides, very often single and without complications.

Further, in children, as in adults, the seat of the tubercles, simple or not, is often in regions of the brain not accessible.

He concludes that there can be a question of surgical intervention in only a small number of cases, even when it is a matter of limited tuberculous lesions of the brain.

All are agreed upon the practical indications of intervention in cerebral tubercles, provided it is indicated by the following conditions: Precise diagnosis of the seat, accessible region, absence of signs of multiple or diffuse lesions, general satisfactory condition of patient.—*Annals of Surgery*, February, 1906.

ABSTRACTS OF CURRENT LITERATURE

DEPARTMENT OF GYNECOLOGY

UNDER THE CHARGE OF

J. Clarence Webster, M. D. — E. C. Dudley, M. D.
John C. Hollister, M. D. — F. W. Lynch, M. D.

Two Cases of Primary Carcinoma of the Female Urethra. By Florence N. Boyd.

The author reports two cases of this interesting and rare condition in women of 51 years of age.

The first case had complained for six months of pain about the vulva, and of a swelling about the urethral orifice, from which was discharged blood and pus. On examination, a tumor the size of one's finger was seen through the dilated meatus; the urethrovaginal septum was hard and indurated in its anterior portion; the inguinal glands were not enlarged. The indurated mass was removed by operation, together with two inches of the urethra, which left but a quarter or a half inch of urethra attached to the bladder. The cut edge was fixed to the edge of the wound, in hopes of creating a new meatus. No return of the growth was noted four and a half years after operation. The specimen is described in the Catalogue of the Royal College of Surgeons Museum as a columnar-celled carcinoma.

Case 2 presents the interesting history of irritation about the vulva, following closely upon an operation for the removal of an ovarian tumor, nine months before she was seen by the author. Pain and burning upon micturition soon followed, then hemorrhage, and the appearance of an ulcerated growth, which was found, upon examination to be of walnut size, and to involve not only the urethra but the adjacent vaginal wall. The clitoris was not involved, but the inguinal glands were swollen. A radical operation was performed, and all but a quarter-inch of the urethra was removed, together with the tumor mass. The cut end of the urethra was fastened to the vaginal wall, and the bladder was drained through a suprapubic incision. The inguinal glands were found to be infiltrated with cancer-cells.

In discussion of the cases, the author states that the urethra did not decrease in caliber following operation, as had been noted in cases described by Thomas, Kynoch, and Fritchs, but shortened in length so that the bladder mucosa protruded through the urethra, and no sphincteric action could be obtained. She believes, therefore, that when it is necessary to remove that part of the urethra which lies above the level of the triangular ligament, it will be better to close the urethral opening and to drain the bladder after suprapubic cystotomy, as has been advocated by McGill, Zweifel, and others.—*Journal of Obstetrics and Gynecology of the British Empire*, Jan., 1906.

The Ætiology, Pathogenesis, and Treatment of Vesical Calculus in Women. By Charles Greene Cumston, M. D., Boston.

In considering the ætiological conditions and the pathogenic mechanism of vesical calculi in women, Cumston takes them up in two groups: 1. Those developing primarily in an aseptic urinary apparatus; and 2. Those formed secondarily in an infected bladder around a foreign body. Calculi of the first class form generally in the kidney, and enlarge only after reaching the bladder, as a result of the deposit of strata of salts upon them. These are composed of uric acid, sodium urate, calcium oxalate, or the bicalcic carbonate and phosphate, cystine or zanthine in varying proportions. Secondary calculi are always preceded in their formation by an infection of the bladder; the urine becomes alkaline and the tri-calcic phosphates, with other salts, are precipitated, forming a calculus about some foreign body. This rapidly increases in size, and at times breaks up spontaneously. Unlike primary calculi, these are soft and friable, and much more frequent. Primary calculi are very rare in women, for the same reason that gout, gravel, and diabetes are exceptional in their sex. Nine times out of ten, one will be dealing with a phosphatic stone secondary to an old inflammation of the urinary tract, with the resultant permanent changes in the mucosa. The nucleus of the calculus may be a collection of pus-globules, degenerated epithelial cells, false membrane, etc.

As regards the causes of this infection, the writer shows that infection alone, as the passage of a

dirty catheter, is not always sufficient to contaminate a healthy bladder. Traumatism, retention, or congestion is a necessary factor. Foreign bodies introduced into the bladder under a variety of circumstances may be easily tolerated for a considerable period of time, but eventually, under the influence of congestion or retention, a cystitis is developed, and the foreign body then becomes the nucleus about which calcium salts are precipitated. Thus a secondary calculus is formed. These foreign bodies are placed by Cumston in four groups: 1. Those introduced for therapeutic purposes; 2. Those used for the purpose of masturbation; 3. Those coming from without by traumatism; 4. Those coming from neighboring organs by perforation or fistula. After becoming incrusted with salts, they produce more or less irritation, set up a simple cystitis, or may cause ulceration or perforation. They may attain very large dimensions, and become complicated with a fatal ureteropyelonephritis.

While the logical treatment of vesical calculi is naturally surgical, the writer regards a careful regulation of the diet and the administration of certain medicines as well in place. The nutrition should be as accurate as possible, with the idea of totally eliminating uric acid. Exercise, hydrotherapy, and massage are indicated as adjuvants, together with alkaline medication. No hope is placed in curative treatment by the so-called dissolvents.

As to surgical treatment, three methods are considered: 1. Dilatation of the urethra; 2. Cystotomy; and 3. Lithotrity. Cumston himself has not had much experience with the first, regarding it as suitable only in women with short, easily dilated urethræ. Under anæsthesia, the neck of the bladder can be dilated to a diameter of three centimeters, under which circumstances calculi of considerable size may be extracted. Cases where stones have been spontaneously expelled are cited. Technically all dilators should be discarded and the fingers alone used, since one can more easily judge the tension produced, and avoid, more or less, the rupture of the sphincters. Hegar's sounds are the safest of the metal dilators, and the meatus may need to be incised. A dilatation up to three fourths of an inch is dangerous, since this almost necessarily lacerates the mucosa and spongy tissue, opening wide the door to infection.

Colpocystotomy and suprapubic cystotomy are the only strictly surgical methods considered. Opening into the bladder *per vaginam* is regarded as an excellent procedure of simple technique. He rarely has a post-operative incontinence, by avoiding the neck of the bladder, and fistulæ do not occur if the incision is properly sutured. The lower cystic wall is pressed down by a grooved male sound introduced through the urethra and held directly in the median line. A three or four centimeter incision in made through the vesicovaginal septum just back of the urethra, through which the calculus may be removed. Drainage through this opening is particularly indicated in serious inflammatory lesions, and, if necessary, tubes may be employed. The interior of the organ will be frequently found lined with a layer of phosphatic deposit, which should be carefully scraped away. Irrigation is done through the drainage-tubes or by the urethra, and, as soon as the condition of the bladder permits, the opening is closed by the ordinary operation for vesicovaginal fistula. Cystotomy by the abdominal route the writer regards as more difficult in women than in men. After the bladder is distended with liquid or air, it is necessary that an assistant keep the urethra compressed. He never uses Peterson's bag in the rectum. This method offers the advantage that a perfect view of the interior of the bladder is obtained, so that any lesions may be directly treated under control of the sight. Rarely is the bladder aseptic in which circumstance it may be at once closed; otherwise drainage is resorted to.

Cumston does not believe that the frequently expressed objections to lithotrity in the female are of sufficient value to incriminate the operation. It is not necessary to reduce the calculus into such small fragments, and the pieces are more readily passed or extracted through the shorter, wider urethra. An experienced surgeon may safely perform the operation without distending the bladder. In addition, lithotrity is a simple and harmless procedure, readily accepted by patients who will refuse a cutting operation, and requiring but two or three days' convalescence, instead of the two weeks' rest in bed following cystotomy. The author prefers the lithotomy position with a slight Trendelenburg tilt. The lithotrite is held vertically, and made to depress the vaginal wall just behind the neck of the bladder. The presence in the bladder of 100 or 150 grams of liquid gives an advantage. The female branch of the instrument is held fixed, the male branch alone being made movable, and the crushing is done in the declivitous portion, where the vesical wall is depressed. Aspiration should always be preceded by irrigation with a Bigelow catheter, and the latter should be continued for several days following.

Finally, after considering the indications for the four operations, the writer concludes as follows:

"Dilatation is not possible in children, and will not allow of the extraction of calculi exceeding three centimeters in diameter. Suprapubic cystotomy should be reserved for cases of large calculi in young girls. Colpocystotomy is to be resorted to in cases where the stone is large or extremely hard, or is developed around foreign bodies and becomes lodged in the bladder, also in cases of vesical infection. Lithotrity would seem to be the method of choice when the stone is friable and of medium size. It is followed by the spontaneous expulsion of fragments, should any be left behind after the operation is completed, and allows the patient to resume her ordinary life within a few days if preceding inflammatory complications of the bladder do not require drainage of the organ." —*Journal of Obstetrics and Gynecology of the British Empire*, vol. viii, 5, p. 306. C. C

HYDATID DISEASE OF THE OVARY, WITH THE REPORT OF A CASE. By W. Travis Gibb.

The case is of a widow, Irish, 57 years, formerly employed as a domestic. She noticed that her abdomen was enlarging some eight months before admission to the hospital, and that she was losing flesh. She complained, moreover, of dyspnœa and general weakness. On examination, the abdomen was found to be greatly distended, without tenderness. Fluid drawn by aspiration contained cysts and the characteristic hooklets. A well-defined "hydatid thrill" was obtained over the tumor.

At operation, the abdominal cavity was found to contain great numbers of cysts of various size, the major portion forming a tumor the size of a man's head and attached by a pedicle to the right ovary. The wall of the stomach and the atrophied greater omentum were involved in hydatid degeneration to a considerable extent. The other abdominal organs appeared normal. Inasmuch as all the cysts from the stomach could not be removed, the author believes that the growth will return. He quotes the case of Cullingworth and Clutton, who opened the abdomen eight times before the disease was checked, for new colonies kept appearing in different parts of the abdomen evidently from rupture of previous cysts.

The author calls attention to the rarity of the disease. Lyon, in 1902, could collect but 241 cases of hydatid disease in man in the United States and Canada. Ninety per cent of these were noted in foreign-born. Of the cases noted in natives, one was born in the United States and two in Canada. Ten were negroes. Gibb states that but seven cases of hydatid disease of the ovary have thus far been reported, only one of which was described in the United States. All of these cases, save one, reported by Péan, were secondary to infection in other organs, and of comparatively small size.—*Annals of Gynecology and Pediatry*, Jan., 1906.

F. W. LYNCH.

MORTALITY OF GYNECOLOGICAL OPERATIONS IN CASES OF EXOPHTHALMIC GOITER. By B. C. Hirst.

The author calls attention to the danger of operating women afflicted with exophthalmic goiter, and collects twenty-three case of American surgeons in which the operation was other than strumectomy, with thirteen deaths. He believes that the condition adds fully 15 per cent to the danger of operation, and calls attention to the fact that the mortality in this series was 16 per cent for minor operations and 33.3 per cent following hysterectomy and myomectomy.

Two cases are reported in the author's service. In one of these, Graves's disease was not known to be present until two days following operation, when the patient presented alarming symptoms, which, however, responded to treatment.—*American Journal of Obstetrics*, Sept., 1905.

ABSTRACTS OF CURRENT LITERATURE

DEPARTMENT OF OBSTETRICS

UNDER THE CHARGE OF

C. S. Bacon, M. D. Rudolph W. Holmes, M. D.

C. v. Bachellé, M. D.

Prophylactic Version. By E. Kraus.

By the term "prophylactic version," Kraus means a version which is made, in case of a contracted pelvis, with the belief that the aftercoming head may be more easily delivered.

In his statistics, comprising 40,000 births, the the above-described prophylactic turning was done 117 times, of which 91 were in multiparæ and 26 in primiparæ. One patient died of sepsis during the puerperium and eleven cases showed some temperature during that period. Three primiparæ sustained complete perineal tears; three other cases had severe cervical tears; one had rupture of the uterus, necessitating its removal. In all the other cases, the puerperia were normal. These results show that the results of the operation are better than, or at least as good as, those of any other method of treatment.

Of the children, 87 lived; 30 died during or soon after delivery. Of the latter, 7 were children of primiparæ and 23 of multiparæ; the combined mortality being 25.6 per cent. He states that although this seems a high percentage, yet a closer study of the case histories shows it to be small.

In determining the indications for prophylactic version, he states that one must consider not only the shape and amount of contraction of the pelvis, but also the size and presentation of the fœtal skull.—*Zeitschr. für Geb. und Gynäk.*, vol. lvi. No. 1.

Twin Placentæ with Single Amnion. By Walter Pfeilsticker.

Pfeilsticker reports such a case in a II para Both children were female; the first, weighing 2,250 grams, was so severely asphyxiated by the compression of the cord by the head of the second twin. that it could not be revived. The second weighed 1,730 grams, and was born five minutes later. The placenta was easily expressed intact, as were also the membranes. The placenta, weighing 1,220 grams, was 23 x 27 cm. in diameter and 2.5 cm. thick. The two thick cords were inserted excentrically into the placenta, about 2 cm. apart, and the lengths were 42 and 39 cm., respectively.

The decidua, chorion, and amnion, though slightly lacerated, were complete and showed a single amniotic cavity. From the inner layer of the amnion there arose a ridge of membrane, which passed between the two cords, curving over the placental surface and partly over the free amniotic sac. Toward the vertex of the fœtal sac, the septum gradually decreased and finally disappeared entirely. The height of the septum varied between 0 and 5 cm. Both sides of this were covered with amniotic membrane, which in some spots could not be separated from each other, though this was possible in other places. The microscopical examination showed the septum to consist of two apposed layers of amnion, which were bound together with fibrous connective tissue. The edge of the septum plainly showed that here the two amnia were torn off. Unfortunately, he was unable to find the exact spot where the septum disappeared. However, he feels that he is justified in believing that the increasing size of the contents of the eggs and the resulting increase of the internal pressure caused extreme thinning and finally disappearance of the dividing layers, except along the edge mentioned, giving the impression that there had been one amniotic sac only, instead of two.—*Zentralblatt f. Gyn.*, No. 49, 1905.

A Case of Intrauterine Acquired Pneumonia. By K. Bochenski and M. Groebel.

In the early part of the paper the writers quote authorities to prove that drugs, bacteria, and toxins and antitoxins may pass through the placenta. Freund and Falk have adduced evidence that carbonic-acid gas, Breslau and Spendly that illuminating-gas, Francais that ammonia, and Zweifel, Fehling, and Merttens that chloroform, may pass through the placenta. Clouet found phosphorus in the liver. Robolski found quicksilver in the urine and meconium of the child. Kormann and De Domenicis have shown that morphia and

strychnia may pass through the afterbirth. Hernieux and Pollak have proven that vaccination of the mother in pregnancy will offer immunity to the fœtus in a considerable proportion of cases. Jacoutini, on the other hand, reports a case of a woman whose children had smallpox, she escaping the infection; shortly thereafter, a dead child was born with typical evidences of smallpox. Chambertlent, Mosse, and Daunic have given reports of the agglutinating power of the fœtal blood to the typhoid bacillus in cases of the disease in the mother. They quote numerous authors who have found bacteria in fœtal structures, as the anthrax, erysipelas streptococci, typhoid germs, and the transmission of smallpox infections, scarlet fever, measles, and syphilis.

Very briefly, the case which aroused their study is that of a multipara, thirty-nine years old, who entered the hospital with pneumonia; three days ater, labor started by a few weak pains and the premature rupture of the membranes. The actual labor lasted about fifteen minutes. The child was living, strong, weighing about seven pounds. Immediately after its birth the infant became cyanotic and dyspnoic; the percussion note of the chest was dull; on auscultation, crepitant râles were heard. The infant died in eleven hours. The post-mortem examination showed that the clinical diagnosis was correct. Cultures showed that the Fraenkel-Weichselbaum diplococcus was present.—*Monatsschrift für Geburtshülfe und Gynäkologie*, Oct., 1905.

Four Cases of Pubiotomy. By Hermann Hohlweg.

Four operations of pubiotomy performed at the Kiel clinic are recorded. In three of the cases, forceps were applied and delivery easily consummated; in the fourth, a version and extraction were easily carried out. The diagonal conjugates varied from 9.2 to 10.4 cm. The last case operated upon died on the fourth day. Cultures taken from the fœtal side of the placenta immediately after its expulsion gave cultures of colon bacilli and staphlococci. All the children lived.

The indication for the operation in each case was a pelvic contraction of the second grade. As a number of examinations had been made in each case, the Cæsarean section was deemed inadvisable. The first operation was done with an open incision, the three others with the Doederlein subcutaneous incision. The bleeding following the sawing of the bone was slight in each case. The separation of the bone was 1.5 cm. to 3 cm. at most. Hohlweg considers that at the time of the passing of the head the separation must have been greater. In one case the bladder was visible in the wound, which must have been due to extensive laceration or stretching of the soft parts. In the fourth case there was hemorrhage from injury to the vagina. During the lying-in the pelvis was held by a pelvic girdle.—*Zentralblatt für Gynäkologie*, No. 42, 1905.

Concerning Pubiotomy. By Karl Reiffenscheid.

Pubiotomy has been performed four times at the Bonn clinic. In each instance the Doederlein method was employed. Hemorrhage in each case was slight. In one instance the bladder was injured by the pressure between the head and sawed bone. The separation of the bone was 3-6 cm. In one case the bone did not materially separate until the band on the anterior aspect of the pubis was torn asunder. In the first two instances the children were delivered by version and extraction, the other two by forceps.

Some three or six months later the women were examined. The second case recorded had a firm union; the first patient had a false joint with some mobility. Reiffenscheid believes the operation is so practical and easily carried out, that it will replace Cæsarean section for relative indications, to some extent.—*Zentralblatt für Gynäkologie*, No. 42, 1905.

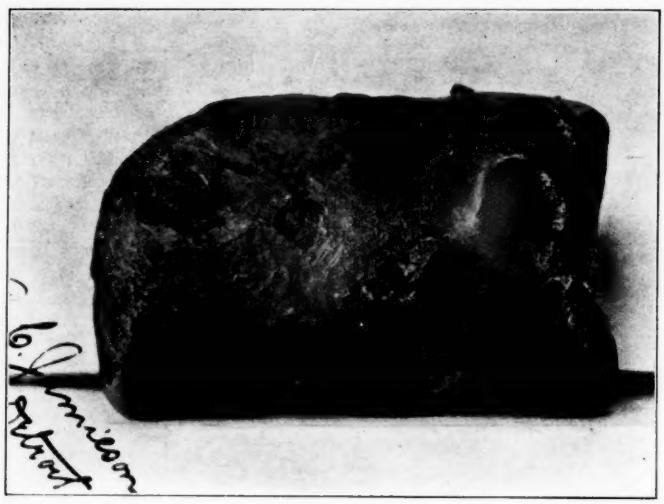
Pregnancy in a Uterus Bicornis Duplex. By H. Peham.

A case of double uterus in pregnancy is recorded. The pregnancy had developed in the right horn and had advanced to the fourth or fifth month. Shortly after admission fever, emesis set in. The examination showed that the left horn had become distended with pus, which escaped from the cervix on pressure. On account of the gravity of the condition — the presence of sepsis — a total hysterectomy was performed. The patient died in 24 hours. Peham objects to the nomenclature of some of the uterine malformations characterized by duplications of parts. He maintains that clinically a true uterus didelphys does not exist. His nomenclature of uterus bicornis duplex is better. A very complete description of the specimen is given, both macroscopic and microscopic, which is impossible to abstract.

CORRESPONDENCE

SURGERY, GYNECOLOGY AND OBSTETRICS:

Mrs. D., age 67, consulted me, August 8th of this year, with the following symptoms and history: For several years has been troubled with an uncomfortable feeling of weight and distress in the right side of the abdomen, accompanied by flatulence and other symptoms of dyspepsia. For the past two or three weeks has suffered from painful and frequent micturition. In December of last year she experienced an attack of acute abdominal pain, from which she soon recovered. She was never jaundiced; urinalysis revealed an abundance of triple phosphate and oxalate crystals, but was otherwise normal. On palpation, a tumor could be felt in the right side of the abdomen, somewhat smooth, hard, slightly movable, easily separated from the liver, but not from the right kidney, and about the size of a clenched fist.



I made an exploratory incision through the right linea semilunaris and removed an immense gall-stone from the gall-bladder, an actual-size cut of which is herewith reproduced. There were so-called cobweb adhesions radiating in every direction from the gall-bladder, and the right lateral aspect of the fundus of the gall-bladder was firmly adherent to the hepatic flexure of the colon. After removing the stone, it was found there were three small openings connecting the lumen of the gall-bladder with that of the colon at the right of the dense adhesions, thus furnishing excellent drainage to the gall-bladder. The cone-shaped space from the concave end of the large stone to the apex of the cystic duct was packed with smaller stones, ranging in size from split-pea to jackstone varieties. These were removed, the gall-bladder thoroughly irrigated with saline solution, the incision in the gall-bladder stitched to the abdominal incision, and a rubber drainage-tube inserted. The patient made an uninterrupted recovery, the drainage-tube was removed on the eighth day, and the biliary fistula closed in about six weeks. The urinary symptoms are much less troublesome, and the patient has entirely recovered.

The interesting features of the case are, the age of the patient, the excellent drainage afforded by nature to the immensely distended gall-bladder, and the size of the large stone, which weighed, one week after removal, 106 grams and measured 7.5 cm. in length, 14.5 cm. in circumference, and 4.5 cm. in diameter.

JOHN N. BELL, M. D.,
Gynecologist to Harper Hospital Polyclinic.

SURGERY, GYNECOLOGY AND OBSTETRICS:

The article of Dr. H. E. Stroud, in the first volume of SURGERY, GYNECOLOGY AND OBSTETRICS, upon the antiseptic action of bromine was extremely interesting. In this connection, you will remember that I reported to the Association of Military Surgeons, a number of years ago, my experience with bromine, both during the days of the Rebellion and subsequent to it, and it has appeared to me that this most valuable antiseptic has been neglected in later years. At that time I drew attention to the fact that during the War of the Rebellion the mortality of cases of gangrene where bromine was used was only $2\frac{6}{10}$ per cent, against 38 to 51 per cent by other methods.

In applications of this kind I am in the habit of dissolving 160 grains of potassium bromine in 2 fluid ounces of water. I then add 1 Troy ounce of bromine, and, stirring actively, pour in sufficient water to make the solution measure 4 ounces. It should be kept in glass-stoppered bottles. It may be diluted in those affections less virulent than gangrene. I have used it in all kinds of septic wounds with the greatest satisfaction.

M. O. TERRY, M. D.,
Ex-Surgeon-General, N. G. N. Y., U. S. A.

SURGERY, GYNECOLOGY AND OBSTETRICS:

An international committee has been formed to solicit and receive contributions for a monument in honor of the late distinguished surgeon, Johannes von Mikulicz-Radecki, of Breslau, Germany.

The undersigned, having been requested to serve on this committee, appeal to the surgeons of the United States and Canada for subscriptions to the fund. An opportunity is afforded not merely to testify to our esteem and affection for Professor von Mikulicz, whose memory is cherished by every surgeon of the land, but also to express our appreciation of Germany's splendid achievements in surgery, and manifest our desire to strengthen the cordial relations existing between the men of science of the two countries.

Contributions may be sent to any member of the committee.

W. W. KEEN (Philadelphia).
W. S. HALSTED (Baltimore).
J. B. MURPHY (Chicago).
F. KAMMERER (New York).

SURGERY, GYNECOLOGY AND OBSTETRICS:

The accompanying photograph is of a case that came under my care last fall.

O. S., colored, age five years, male.

The mother first noticed a small growth in lower left maxillary region, about the latter part of August. I saw the patient September 30th, and the growth at that time was the size of an orange. Necrosis of the bone of the lower maxilla was pronounced, with fetor and sloughing in the mouth. No pain was complained of at any time of the disease. The swelling did not spread to the face till nine or ten days before death.

In making a small incision in the most prominent part of the tumor, nothing but blood and necrotic

material came away. The whole inner mass seemed to be gangrenous. On September 20th, with Dr. King, I opened up the mass, as shown in cut, and inserted drainage-tube through into mouth, preparatory to removal. But emaciation and weakness was so pronounced that nothing was attempted. The patient died the twenty-eighth day of October, 1905.

I am not certain as to diagnosis. No microscopic examination was made. The rapid formation and character favored sarcoma. A specific history was suspected, but not positive.

Yours,
DR. W. E. RISINGER.

POST-GRADUATE MEDICAL STUDY IN EUROPE

Before going abroad, the question of why so many physicians study in Europe, arose in my mind, and I was anxious to discover the cause therefor. I might say now that any doubts that I may have entertained in regard to the actual value of the medical work, have disappeared. This value depends, probably, chiefly on the intrinsic worth of the medical study, but no small

factor is the fact that one is removed from the worries and cares incident to every-day life at home, and is able to devote his entire time to the work.

The disparity in the estimations given by those returning from abroad of the good derived, depends on several variable factors, among which are: variability in ideals, the knowledge of or ability to learn the foreign language and place chosen for study.

What few remarks I wish to make must necessarily be confined to the medical work of Berlin and Vienna, as in these two cities only did I engage in study.

If one wishes to take up general medicine (i. e., several lines at one time), Vienna is by all means the place in which to do it. The general hospital (Allgemeines Kraukenhaus) in this city contains about three thousand beds, and it is in this hospital that the greater part of the medical teaching is carried on. The only other hospital at which even a moderate number of "courses" are given is the Polyclinic, two blocks distant.

Thus, in Vienna, one is able to concentrate his work, while in Berlin the clinics are widely separated, which entails a great loss of time in going from one to the other.

Internal medicine abroad is especially good, and had I obtained nothing else, I should have felt amply repaid for the time and money expended. The exact clinical diagnoses made are, in many cases, remarkable. The great development of this branch of medicine is due, largely, to their excellent hospital system. The lowest position on the hospital staff is occupied by a practicing physician or surgeon, who is placed in charge of three to five beds.

During his spare hours (which, in the case of a young physician of Vienna, are not few), he writes the histories and performs all of the clinical examinations, including laboratory work. This relieves the men higher in rank of all unnecessary drudgery. Thus, the cases are all well "worked up," and many times the exact diagnosis of a case, which, by many would be left open, or mentioned as being one of two or three possibilities, is determined by some routine clinical or laboratory test.

A professor "attends" at one hospital only, but he visits this hospital every day, and is acquainted with all his cases.

Without exception, autopsies are held on all those dying in the hospitals, and all mistakes in diagnosis are boldly exposed. This naturally has the effect of inducing the clinician to be more careful in making his diagnoses, and also to enable him to profit by his mistakes, which, in Europe, are never buried.

Should one care to devote his entire time to any one branch of medicine, especially internal medicine, surgery, gynæcology, or pathology, he would probably do well to associate himself with a hospital in one of the smaller cities instead of going to Berlin or Vienna.

To my certain knowledge the professors in Munich, Prague, and Budapest (and others, of which I have less definite information), are willing, and apparently anxious, to have American assistants in the hospitals. This method of studying, aside from being excellent from a scientific standpoint, also has its financial advantages, since, in the larger cities mentioned, the teaching is all carried on by means of "courses," which are very expensive.

The young surgeon, gynæcologist, or obstetrician who is seeking his special branch, would do well to choose some particular man whom he desires to work with, and follow up his diagnostic and pathological work particularly, as an assistant, if possible, rather than seek a thin veneer from more general courses and clinics.

After all has been said, it must, of course, be acknowledged that, in Europe, as in America, or any other country, one's return from his work are equal to what he puts into it; and, just as in medical colleges, plenty of students are seen who draw only blanks, so, also, are there some men who, on returning from abroad, possess, as the only evidence thereof, diplomas which some instructors were induced to sign as evidence of some imaginary work in their departments.

These exceptional cases, however, do not contradict the fact that excellent opportunities for good work exist abroad, and when one goes to Europe with the intention of working, he will return feeling amply repaid for his efforts. A. A. G.